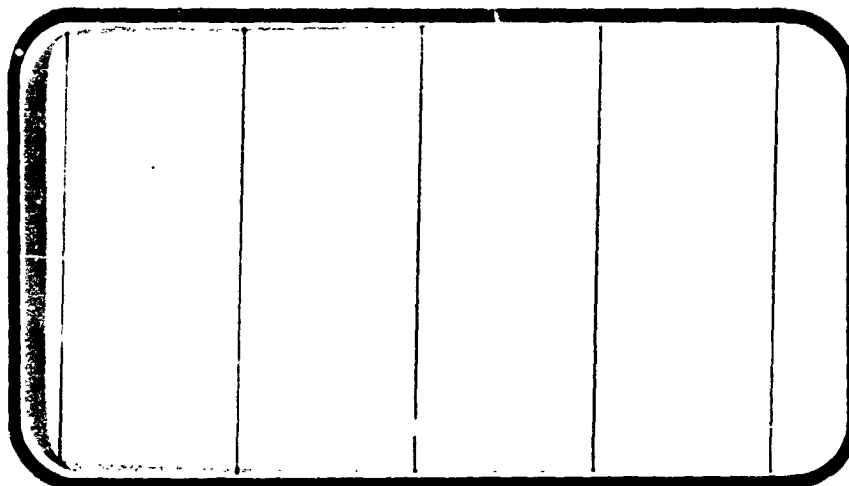


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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION



NASA-CR-134085) RESULTS OF INVESTIGATIONS
ON A 0.015-SCALE MODEL (49-0) OF THE
SPACE SHUTTLE ORBITER IN THE NASA/AMES
3.5-FOOT HYPERSONIC WIND TUNNEL (Chrysler
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SPACE SHUTTLE

AEROTHERMODYNAMIC DATA REPORT

JOHNSON SPACE CENTER

HOUSTON, TEXAS

DATA Management services

SPACE DIVISION



**CHRYSLER
CORPORATION**

February, 1974

DMS-DR-2115
NASA CR-134,085

RESULTS OF INVESTIGATIONS ON
A 0.015-SCALE MODEL (49-0) OF THE
SPACE SHUTTLE ORBITER IN THE NASA/AMES
3.5-FOOT HYPERSONIC WIND TUNNEL
(OA87)

By

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Prepared under NASA Contract Number NAS9-13247

By

Data Management Services
Chrysler Corporation Space Division
New Orleans, La. 70189

for

Engineering Analysis Division
Johnson Space Center
National Aeronautics and Space Administration
Houston, Texas

TEST SPECIFICS:

Test Number: ARC 3.5-176
Model Number: 49-0
NASA Series Number: OA87
Test dates: 16 through 23 October 1973

FACILITY COORDINATOR:

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PROJECT ENGINEERS:

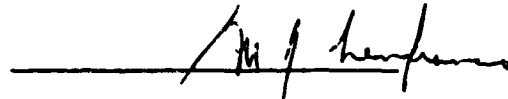
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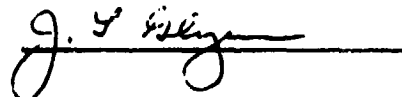


B. W. Myers
Data Operations



This document has been reviewed and approved for release.

for N. D. Kemp
Data Management Services



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RESULTS OF INVESTIGATIONS ON A 0.015-SCALE MODEL (49-0)
OF THE SPACE SHUTTLE ORBITER IN THE
NASA/AMES 3.5-FOOT HYPERSONIC WIND TUNNEL (OA87)

By

M. T. Petrozzi and M. D. Milam, Rockwell International
J. A. Mellenthin, NASA/Ames

ABSTRACT

Experimental aerodynamic investigations were conducted during the period of October 16 through October 23, 1973 in the NASA/Ames 3.5-Foot Hypersonic Wind Tunnel on a 0.015-scale model of the Space Shuttle Orbiter, Configuration 140A/B.

The objectives of this test were as follows: 1) verify supersonic stability and control characteristics, 2) analyze aerodynamic problem areas, 3) verify control surface effectiveness, and 4) investigate Reynolds number effects.

Six-component aerodynamic force and moment data were recorded over an angle of attack range from 22° to 46° at a constant sideslip angle of 0° .

The test Mach number was varied from 5.3 to 7.3 to 10.3. The Reynolds number per unit length was varied from 0.805×10^6 to 10×10^6 per foot.

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COEFFICIENT SCHEDULE:

- A: CL, CN, CD, CDF, CA, CAF, CAB, CLMFWD, CLMAFT, XCP/L, L/D VS. ALPHA
CL, CN VS. CLMFWD
CL VS. CD
- B: DCL, DCN, DCD, DCDF, DCA, DCAF, DCAB, DCMFWD, DCMAFT VS. ALPHA
- C: DCL, DCN, DCD, DCA, DCMFWD, DCMAFT VS. ELEVON
- D: DCL, DCN, DCD, DCA, DCMFWD, DCMAFT, VS. BDFLAP
- E: CY, CYN, CBL VS. ALPHA
- F: CL, CN, CD, CA, CLMFWD VS. ALPHA

NOMENCLATURE General

<u>SYMBOL</u>	<u>ADCSAC SYMBOL</u>	<u>DEFINITION</u>
a		speed of sound; m/sec, ft/sec
C_p	CP	pressure coefficient; $(p_1 - p_\infty)/q$
M	MACH	Mach number; V/a
p		pressure; N/m^2 , psf
q	Q(NSM) Q(PSF)	dynamic pressure; $1/2\rho V^2$, N/m^2 , psf
Re/L	Re/L	unit Reynolds number; per m, per ft
V		velocity; m/sec, ft/sec
α	ALPHA	angle of attack, degrees
β	BETA	angle of sideslip, degrees
ψ	PSI	angle of yaw, degrees
ϕ	PHI	angle of roll, degrees
ρ		mass density; kg/m^3 , slugs/ft ³

Reference & C.G. Definitions

A_b		base area; m ² , ft ²
b	BREF	wing span or reference span; m, ft
c.g.		center of gravity
\bar{L}_{REF} \bar{c}	LREF	reference length or wing mean aerodynamic chord; m, ft
S	SREF	wing area or reference area; m ² , ft ²
	MRP	moment reference point
	XMRP	moment reference point on X axis
	YMRP	moment reference point on Y axis
	ZMRP	moment reference point on Z axis

SUBSCRIPTS

b	base
l	local
s	static conditions
t	total conditions
∞	free stream

NOMENCLATURE (Continued)

Body-Axis System

<u>SYMBOL</u>	<u>SADGAC SYMBOL</u>	<u>DEFINITION</u>
C_N	CN	normal-force coefficient; $\frac{\text{normal force}}{qS}$
C_A	CA	axial-force coefficient; $\frac{\text{axial force}}{qS}$
C_Y	CY	side-force coefficient; $\frac{\text{side force}}{qS}$
C_{A_b}	CAB	base-force coefficient; $\frac{\text{base force}}{qS}$ $-A_b(p_b - p_n)/qS$
C_{A_f}	CAF	forebody axial force coefficient; $C_A - C_{A_b}$
C_m	CLM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS L_{REF}}$
C_n	CYN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qS b}$
C_l	CLL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qS b}$

Stability-Axis System

C_L	CL	lift coefficient; $\frac{\text{lift}}{qS}$
C_D	CD	drag coefficient; $\frac{\text{drag}}{qS}$
C_{D_b}	CDB	base-drag coefficient; $\frac{\text{base drag}}{qS}$
C_{D_f}	CDF	forebody drag coefficient; $C_D - C_{D_b}$
C_Y	CY	side-force coefficient; $\frac{\text{side force}}{qS}$
C_m	CLM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS L_{REF}}$
C_n	CLN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qS b}$
C_l	CSL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qS b}$
L/D	L/D	lift-to-drag ratio; C_L/C_D
L/D_f	L/DF	lift to forebody drag ratio; C_L/C_{D_f}

NOMENCLATURE (Continued)

ADDITIONS TO NOMENCLATURE

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
C_{mFWD}	CLMFWD	pitching moment coefficient about forward center of gravity.
C_{mAFT}	CLMAFT	pitching moments coefficient about aft center of gravity.
ΔC_N	DCN	incremental normal force coefficient, algebraic difference of two runs.
ΔC_A	DCA	incremental axial force coefficient, algebraic difference of two runs.
ΔC_{AB}	DCAB	incremental base axial force coefficient, algebraic difference of two runs.
ΔC_{AF}	DCAF	incremental forebody axial force coefficient, algebraic difference of two runs.
ΔC_L	DCL	incremental lift coefficient, algebraic difference of two runs.
ΔC_D	DCD	incremental drag coefficient, algebraic difference of two runs.
ΔC_{DFWD}	DCDF	incremental forebody drag coefficient; algebraic difference of two runs.
ΔC_{mAFT}	DCMFWD	incremental pitching moment coefficient about forward C.G., algebraic difference of two runs.
ΔC_m	DCMAFT	incremental pitching moment coefficient about aft C.G., algebraic difference of two runs.
δ_{eL}		left elevon surface deflection angle, positive deflection trailing edge down; degrees.

NOMENCLATURE (Concluded)

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
δ_{eR}		right elevon surface deflection angle, positive deflection trailing edge down; degrees.
δ_e	ELEVON	surface deflection angle, positive deflection trailing edge down; degrees $(\delta_{eL} + \delta_{eR})/2$.
δ_{SB}	SPDBRK	speed brake deflection angle, degrees.
δ_R	RUDDER	rudder deflection angle, degrees.
δ_{BF}	BDFLAP	body flap deflection angle, degrees.
δ_a	AILRON	aileron deflection angle, positive deflection trailing edge down; degrees $(\delta_{eL} - \delta_{eR})/2$.

CONFIGURATIONS INVESTIGATED

The test vehicle was a 0.015-scale model of the Space Shuttle Orbiter. It was sting mounted in the wind tunnel utilizing the Task Mark II 1.5-inch internal strain gage balance to measure six-component aerodynamic force and moment data.

A 30° sting adapter was utilized to obtain the high angles of attack which were required. Utilizing this adapter, angles of attack up to 46° were achieved.

Rudder and speedbrake positions were fixed at 0° and 55°, respectively, throughout the test. The elevon positions tested were -40°, -10°, 0° and +15°. Aileron settings of +5° were also tested. The vehicle body-flap deflection was varied at -11.7° and +16.3°.

The model configuration is summarized below:

$$O_{10} = B_{26} C_9 E_{26} F_7 M_7 N_{28} R_5 V_8 W_{116}$$

<u>Component</u>	<u>Definition</u>
B ₂₆	Fuselage per Rockwell Lines VL70-000140A and VL70-000140B (Model Drawings SS-A00147)
C ₉	Canopy per Rockwell Lines VL70-000140A and VL70-000143A (Model Drawings SS-A00147)
E ₂₆	Elevons per Rockwell Lines VL70-000200 (Model Drawing SS-A00148)
F ₇	Body flap per Rockwell Lines VL70-000200 (Model Drawing SS-A00147)
M ₇	OMS/RCS pods per Rockwell Lines VL70-000145 (Model Drawing SS-A00147)
N ₂₈	OMS engine nozzles per Rockwell Lines VL70-000145 (Model Drawing SS-A00147)

R₅ Rudder per Rockwell Lines VL70-000146A (Model Drawing
SS-A00148)

V₈ Vertical tail per Rockwell Lines VL70-000146A (Model
Drawing SS-A00148)

W₁₁₆ Wing per Rockwell Lines VL70-000200 (Model Drawing
SS-A00148)

TEST FACILITY

The NASA-Ames 3.5-Foot Hypersonic Wind Tunnel is a closed-circuit, blowdown-type tunnel capable of operating at nominal Mach numbers of 5, 7, and 10 at pressures to 1800 psia and temperatures to 3400°R for run times to four minutes. The major components of the facility include a gas storage system where the test gas is stored at 3000 psi, a storage heater filled with aluminum-oxide pebbles capable of heating the test gas to 3400°R, axisymmetric contoured nozzles with exit diameters of 42 inches for generating the desired Mach number, and a 900,000 ft³ vacuum storage system which operates to pressures of 0.3 psia. The test section itself is an open-jet type enclosed within a chamber approximately 12-feet in diameter and 40-feet in length, arranged transversally to the flow direction.

A model support system is provided that can pitch models through an angle-of-attack range of -20 to +18 degrees, in a vertical plane, about a fixed point of rotation on the tunnel centerline. This rotation point is adjustable from 1 to 5 feet from the nozzle exit plane. The model normally is out of the test stream (strut centerline 27-inches from tunnel centerline) until the tunnel test conditions are established after which it is inserted. Insertion time is adjustable to as little as 1/10 second and models may be inserted at any strut angle.

A high-speed, analog-to-digital data acquisition system is used to record test data on magnetic tape. The present system is equipped to measure and record the outputs from 80 transducers in addition to 70 channels of tunnel parameters.

DATA REDUCTION

The aerodynamic forces and moments recorded by the internal strain gage balance were reduced to coefficient form in the body axis system utilizing the following reference dimensions:

Symbol	Definition	Model Scale	Full Scale
S_{ref}	wing planform area, ft^2	0.6053	2690.0
l_{ref}	model body length, in.	19.4	1290.3
b_{ref}	wing span, in.	14.05	936.68

Moments are referenced about model station 16.147 (fuselage station 1076.48), on the fuselage at water line 5.625 (WL375).

Model base and cavity pressures were measured during the test and have been used to correct the data for model base effects. Location and areas for these pressures were as shown in figure 2b.

TABLE 1.

15

TABLE II.

TEST: CA87		3.8-176		DATE:										DATA SET/RUN NUMBER COLLATION SUMMARY										TEST RUN NUMBERS									
DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES										NO. OF RUNS	MACH NUMBERS		7	13	19	25	31	37	43	49	55	61	67	75	76	NDV			
		A	B	1	2	3	4	5	6	7	8	9	10		001	002																	
REF001	710 F13	B		0	0	0	0	0	0	0	0	0	0	1	001																		
002				0	0	0	0	0	0	0	0	0	0	1	002																		
003				0	0	0	0	0	0	0	0	0	0	1	003																		
004		Y		0	0	0	0	0	0	0	0	0	0	1	004																		
005		A		0	0	0	0	0	0	0	0	0	0	1	005																		
006				0	0	0	0	0	0	0	0	0	0	1	006																		
007				0	0	0	0	0	0	0	0	0	0	1	007																		
008				0	0	0	0	0	0	0	0	0	0	1	008																		
009				0	0	0	0	0	0	0	0	0	0	1	009																		
010				0	0	0	0	0	0	0	0	0	0	1	010																		
011		Y		0	0	0	0	0	0	0	0	0	0	1	011																		
012		R		0	0	0	0	0	0	0	0	0	0	1	012																		
013				0	0	0	0	0	0	0	0	0	0	1	013																		
014				0	0	0	0	0	0	0	0	0	0	1	014																		
015				0	0	0	0	0	0	0	0	0	0	1	015																		
016				0	0	0	0	0	0	0	0	0	0	1	016																		
017				0	0	0	0	0	0	0	0	0	0	1	017																		
REF 018		Y		0	0	0	0	0	0	0	0	0	0	1	018																		

TABLE II. (Concluded)

TEST: 0A 87

DATE:

DATA SET/RUN NUMBER COLLATION SUMMARY

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES								A.O. RUNS	MACH NUMBERS		
		α	β	ScL	ScR	Sc	Sc	Sc	Sc	Sc	Sc		5.3	7.3	10.3
REF 019	140 A/B	B	0	10	0	-11.7	0	55				10			
020		A		40		-11.7						3		020	
021				10	10	16.3						3		021	
022				0	0	0						3		022	
023				0	0	0					1.3	1		023	
024				0	0	0					1.3	1		024	
025		Y		0	0	0					.81	1		025	
026		B		0	0	0					3	1		026	
027				40	-40	16.3					3	1		027	
028				10	10	16.3					3	1		028	
Y 029				40	-40	-11.7					3	1		029	
REF 030	Y	Y	Y	0	0	0		Y	Y		3	1		030	

1

7

13

19

25

31

37

43

49

55

61

67

73

75.76

TEST RUN NUMBERS

α OR β SCHEDULES

A = 22°, 46°, 42°, 38°, 34°, 30°, 26°, 22°, 18°, 14°, 10°, 22°

B = 22°, 34°, 30°, 26°, 22°, 18°, 14°, 10°, 22°

COEFFICIENTS

ICVAR (1)

IC / AR (2)

NOV

TABLE III. - MODEL DIMENSIONAL DATA

MODEL COMPONENT: BODY - B₂₆

GENERAL DESCRIPTION: Orbiter Fuselage Configuration 140 A/B

NOTE: B₂₆ identical to B₂₄ except underside of fuselage refaired to accept W₁₁₆.

Model Scale = 0.015

Model Drawing No. SS-600147

DRAWING NUMBER:

VL70-000193

VL70-000140A

DIMENSIONS:

FULL-SCALE

MODEL SCALE

Length (Body Fwd Sta $X_0 = 235$) - in.

1293.3

19.400

Max. Width (at $X_0 = 1520$) - in.

262.0

3.93

Max. Depth (at $X_0 = 1464$) - in.

250.0

3.75

Fineness Ratio

0.26357

0.26357

Area - ft²

Max. Cross-Sectional

340.88462

0.07670

Planform

Wetted

Base

TABLE III. - Continued.

MODEL COMPONENT: CANOPY - C₉

GENERAL DESCRIPTION: Configuration 140 A/B Orbiter Fuselage

Model Scale = 0.015

Model Drawing No. SS-A00147

DRAWING NUMBER

VL70-000140A

VL70-000143A

DIMENSION:

FULL SCALE

MODEL SCALE

Length ($X_0=434.643$ to 670)

235.357

3.530

Max Width (@ $X_0=513.127$)

152.412

2.286

Max Depth (@ $X_0=485.0$)

25.000

0.375

Fineness Ratio

Area

Max Cross-Sectional

Planform

Wetted

Base

TABLE III. - Continued.

MODEL COMPONENT: ELEVON - E₂₆

GENERAL DESCRIPTION: Configuration 140 A/B Orbiter Elevon

NOTE: VL70-000200 data for (1) of (2) sides. Identical to E₂₅ except
airfoil thickness.

Model Scale: 0.015 Model Drawings No. 88-A00148

DRAWING NUMBER: VL70-000200
VL70-000140B

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area	<u>210.0</u>	<u>0.0473</u>
Span (equivalent)	<u>349.2</u>	<u>5.238</u>
Inb'd equivalent chord	<u>118.004</u>	<u>1.770</u>
Outb'd equivalent chord	<u>55.1922</u>	<u>0.828</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>0.2096</u>	<u>0.2096</u>
At Outb'd equiv. chord	<u>0.4004</u>	<u>0.4004</u>
Sweep Back Angles, degrees		
Leading Edge	<u>0.00</u>	<u>0.00</u>
Tailing Edge	<u>- 10.056</u>	<u>- 10.056</u>
Hingeline	<u>0.00</u>	<u>0.00</u>
Area Moment (Normal to hinge line)	<u>1587.25</u>	<u>0.00536</u>

TABLE III. - Continued.

MODEL COMPONENT: Body Flap - F₇

GENERAL DESCRIPTION: Configuration 140A/B Orbiter Body Flap

NOTE: Hinge line located at $X_0 = 1528.3$

Model Scale = 0.015

DRAWING NUMBER

VL70-000140A, VL70-000145

<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ($X_0=1520$ to $X_0=1613$) - IN.	93.000	1.395
Max Width - IN.	262.000	3.930
Max Depth ($X_0 = 1520$) - IN.	23.000	0.345
Fineness Ratio		
Area - Ft ²		
Max Cross-Sectional		
Planform	142.6	0.321
Wetted		
Base		

TABLE III. - Continued.

MODEL DIMENSIONAL DATA

MODEL COMPONENT : OMS POD (M₇)

GENERAL DESCRIPTION : Configuration 140 A/B Orbiter OMS-Pod

Model Scale: 0.015 Model Drawing No. SS-A00147

DRAWING NUMBER : VL70-000140A
VL70-000145

DIMENSIONS :	FULL SCALE	MODEL SCALE
Length (OMS Fwd Sta $X_0=1233.0$) IN.	<u>327.000</u>	<u>4.905</u>
Max Width (@ $X_0 = 1450.0$) IN.	<u>94.5</u>	<u>1.418</u>
Max Depth (@ $X_0=1493.0$) - IN.	<u>109.000</u>	<u>1.635</u>
Fineness Ratio	<u> </u>	<u> </u>
Area	<u> </u>	<u> </u>
Max. Cross-Sectional	<u> </u>	<u> </u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>

TABLE III. - Continued.

MODEL COMPONENT: OMS NOZZLE (N₂₈)

GENERAL DESCRIPTION: Configuration 140 A/B Orbiter OMS Nozzle

MODEL SCALE: - 0.015

Model Drawing No. SS-A00147

DRAWING NO.: VL70-000140A

DIMENSIONS:

FULL SCALE

MODEL SCALE

Gimbal Point (Station) ~ in.

X	1518.0	22.77
Y	± 88.0	1.32
Z	294.0	7.38

Null Position ~ Deg.

Pitch	15° 49'	15° 49'
Yaw (Outboard)	12° 17'	12° 17'

TABLE III. - Continued.

MODEL COMPONENT: Rudder - R₅

GENERAL DESCRIPTION: Configuration 140 A/" Orbiter Rudder

MODEL SCALE: 0.015 MODEL DRAWING No. SS-A00148

DRAWING NUMBER: VL70-000095, VL70-000146A

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area - ft^2	<u>106.38</u>	<u>0.0239</u>
Span (equivalent) - in.	<u>201.0</u>	<u>3.015</u>
Inb'd equivalent chord	<u>91.585</u>	<u>1.374</u>
Outb'd equivalent chord	<u>50.833</u>	<u>0.762</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>0.400</u>	<u>0.400</u>
At Outb'd equiv. chord	<u>0.400</u>	<u>0.400</u>
Sweep Back Angles, degrees		
Leading Edge	<u>34.83</u>	<u>34.83</u>
Trailing Edge	<u>26.25</u>	<u>26.25</u>
Hingeline	<u>34.83</u>	<u>34.83</u>
Area Moment (Normal to hinge line) - ft^3	<u>526.13</u>	<u>0.00178</u>
Product of Area and Mean Chord		

TABLE III. - Continued

MODEL COMPONENT: VERTICAL - V_EGENERAL DESCRIPTION: Configuration 140 A/B Vertical TailNOTE: Similar to V5 with radius on TE upper corner and LE lower cornerwhere vertical meets fuselage.Model Scale = 0.015Model Drawing No. JS-A00148DRAWING NUMBER:VL70-000140AVL70-000146ADIMENSIONS:FULL-SCALEMODEL SCALETOTAL DATA

Area (Theo) Ft ²	413.253	0.09298
Planform		
Span (Theo) In	315.720	4.73580
Aspect Ratio	1.675	1.675
Rate of Taper	0.507	0.507
Taper Ratio	0.40399	0.40399
Sweep Back Angles, degrees		
Leading Edge	45.00	45.00
Trailing Edge	25.947	25.947
0.25 Element Line	41.130	41.130
Chords:		
Root (Theo) WP	268.500	4.02750
Tip (Theo) WP	108.470	1.62705
MAC	199.80756	2.99711
Fus. Sta. of .25 MAC	1463.50	21.95250
W. P. of .25 MAC	635.522	
B. L. of .25 MAC	0.00	0.00
Airfoil Section		
Leading Wedge Angle Deg	10.00	10.00
Trailing Wedge Angle Deg	14.922	14.920
Leading Edge Radius (Min) - IN.	2.00	0.0300
Void Area	13.17	0.00296
Blanketed Area	0.00	0.00

TABLE III. - Concluded.

MODEL COMPONENT: WING-W₁₁₆GENERAL DESCRIPTION: Configuration 140 A/B Orbiter WingNOTE: Identical to W₁₁₄ except airfoil thickness. Dihedral angle is along
trailing edge of wing.

Model Scale = 0.015

Model Drawing No. SS-A00148

TEST NO.VL70-000140B
DWG. NO. VL70-000 200DIMENSIONS:FULL-SCALEMODEL SCALETOTAL DATAArea (Theo.) Ft^2

Planform

2690.00

0.6053

Span (Theo In.

936.6816

14.050

Aspect Ratio

2.265

2.265

Rate of Taper

1.177

1.177

Taper Ratio

0.200

0.200

Dihedral Angle, degrees (at $X_0=1506.623, Y_0=$

3.500

3.500

Incidence Angle, degrees 105, $Z_0=282.75$)

0.500

0.500

Aerodynamic Twist, degrees

+3.000

+3.000

Sweep Back Angles, degrees

45.00

45.00

Leading Edge

-10.056

-10.056

Trailing Edge

35.209

35.209

0.25 Element Line

Chords:

Root (Theo) B.P.O.O.

689.2429

10.339

Tip, (Theo) B.P.

137.8486

2.068

MAC

474.8117

7.222

Fus. Sta. of .25 MAC

1126.721

17.051

W.P. of .25 MAC

291.00

4.365

B.L. of .25 MAC

187.33491

2.810

EXPOSED DATAArea (Theo) Ft^2

1812.2205

0.408

Span, (Theo) In. BP108

736.6816

11.050

Aspect Ratio

2.058

2.058

Taper Ratio

0.2451

0.2451

Chords

Root BP108

570.6230

8.559

Tip $1.00 \frac{b}{2}$

137.8512

2.06

MAC

354.2376

5.314

Fus. Sta. of .25 MAC

1164.237

17.464

W.P. of .25 MAC

292.00

4.380

B.L. of .25 MAC

239.67786

3.595

Airfoil Section (Rockwell Mod NASA)

XXXX-64

Root $b = 0.425$

0.113

0.113

Tip $b = 1.00$

0.12

0.12

Data for (1) of (2) Sides

Leading Edge Cuff Ft^2

118.333

0.0266

Planform Area

505.0

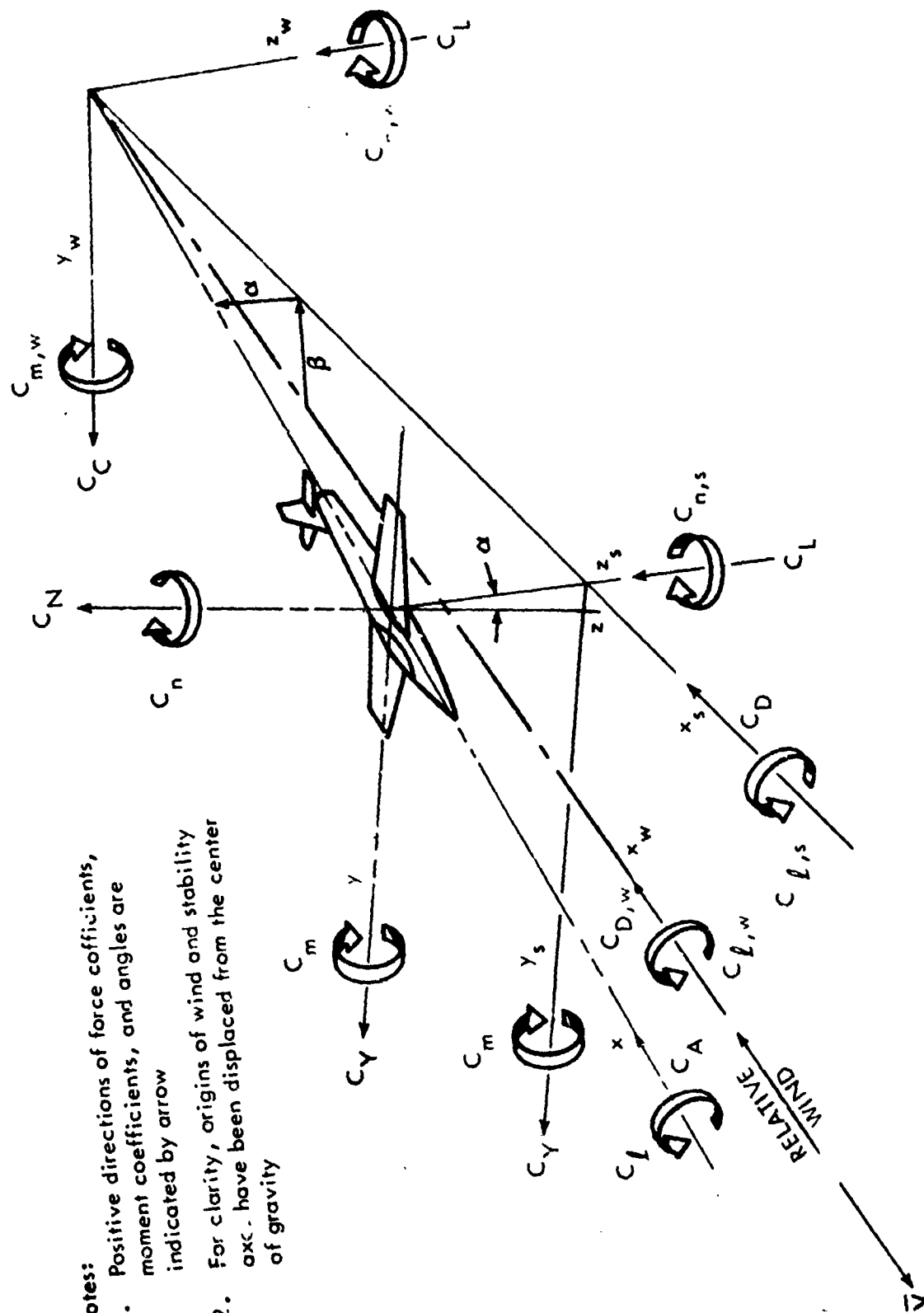
7.575

Leading Edge Intersects Fus M. L. @ Sta

1003.5

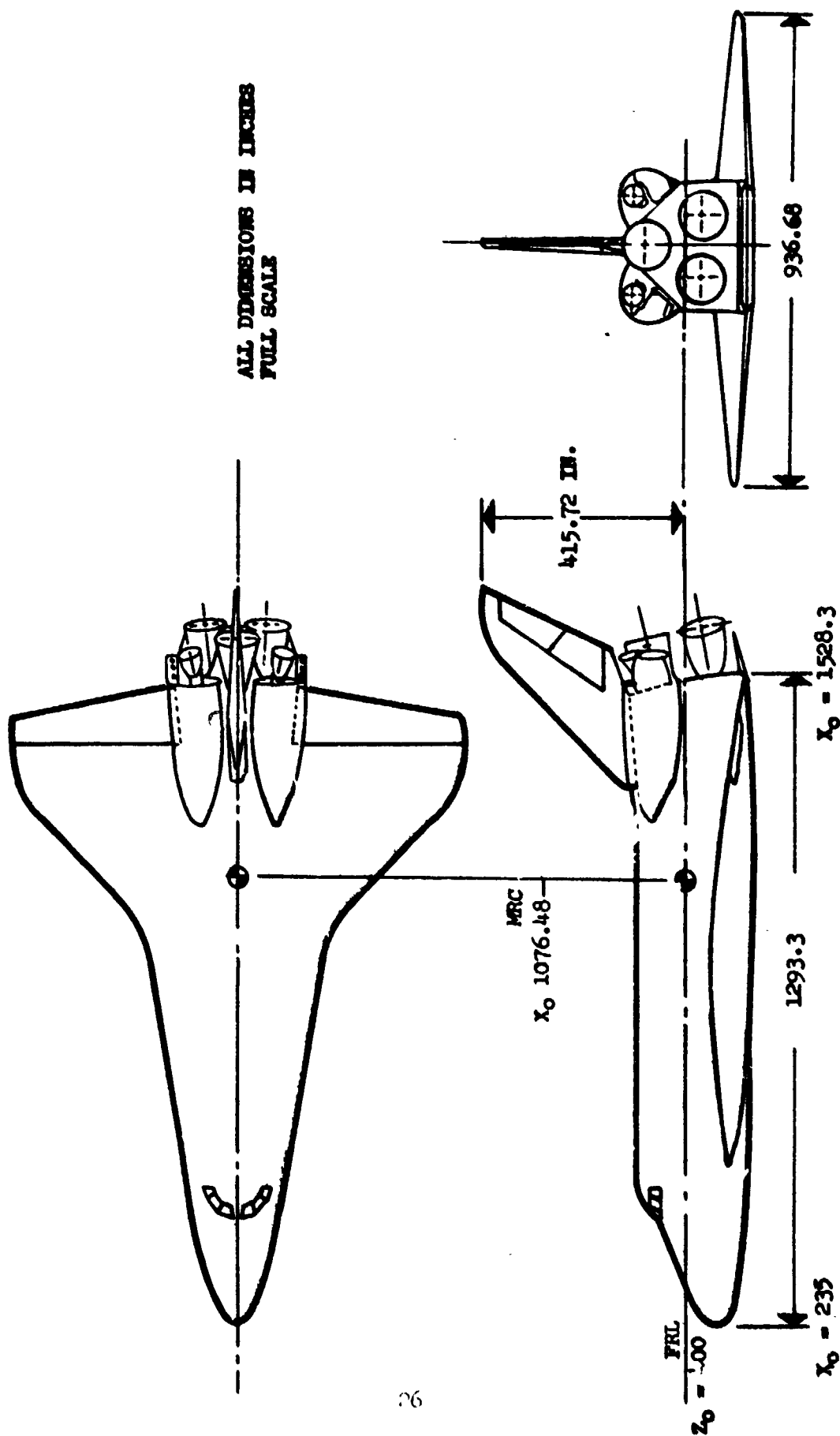
15.053

Leading Edge Intersects Wing @ Sta



- Notes:
1. Positive directions of force coefficients, moment coefficients, and angles are indicated by arrow
 2. For clarity, origins of wind and stability axes have been displaced from the center of gravity

Figure 1. - Axis systems.



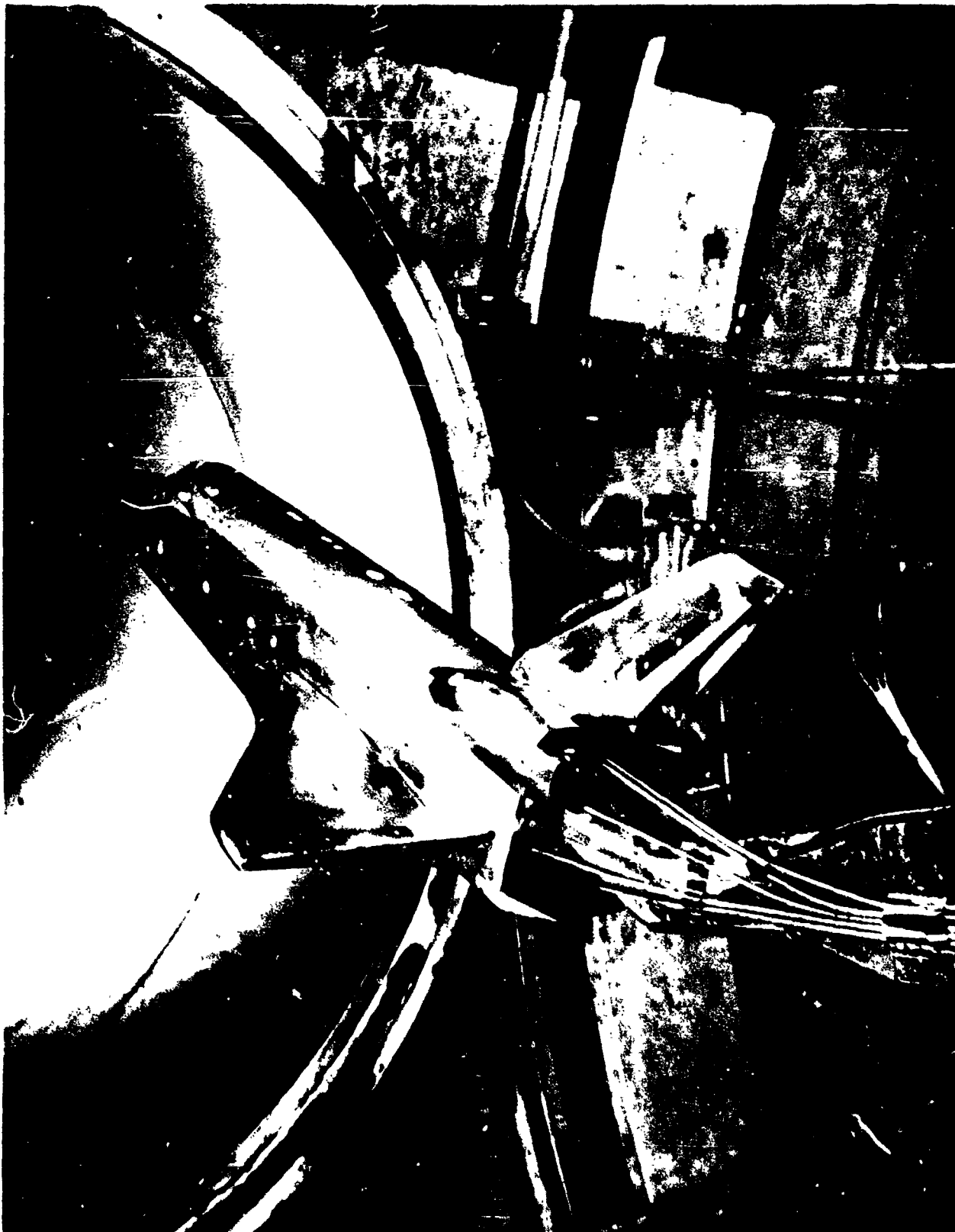
a. SSV Orbiter Configuration 140A/B for Test OA37

Figure 2. - Model sketches



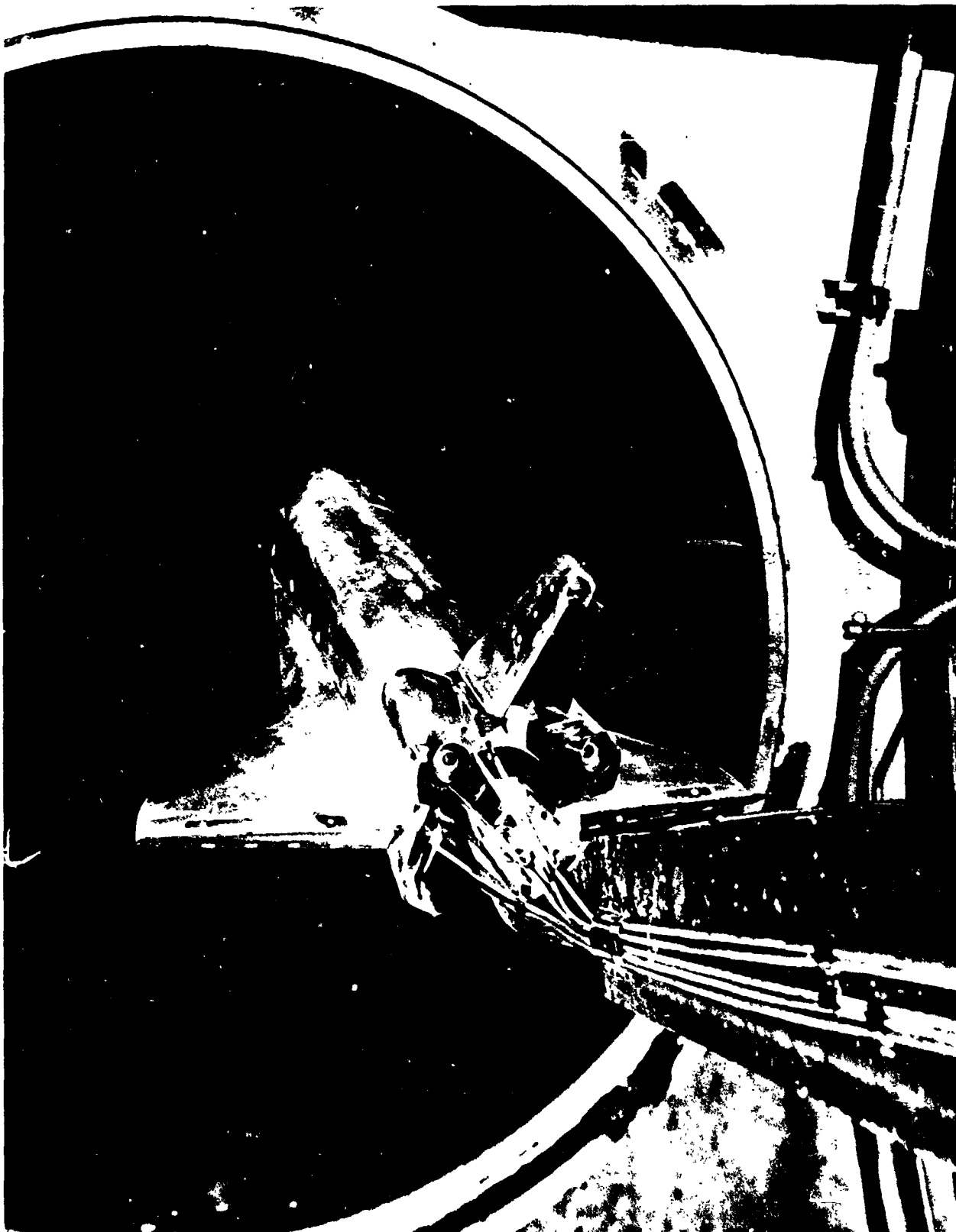
b. Base and Cavity Pressure Locations for Test OA87

Figure 2. - Concluded.



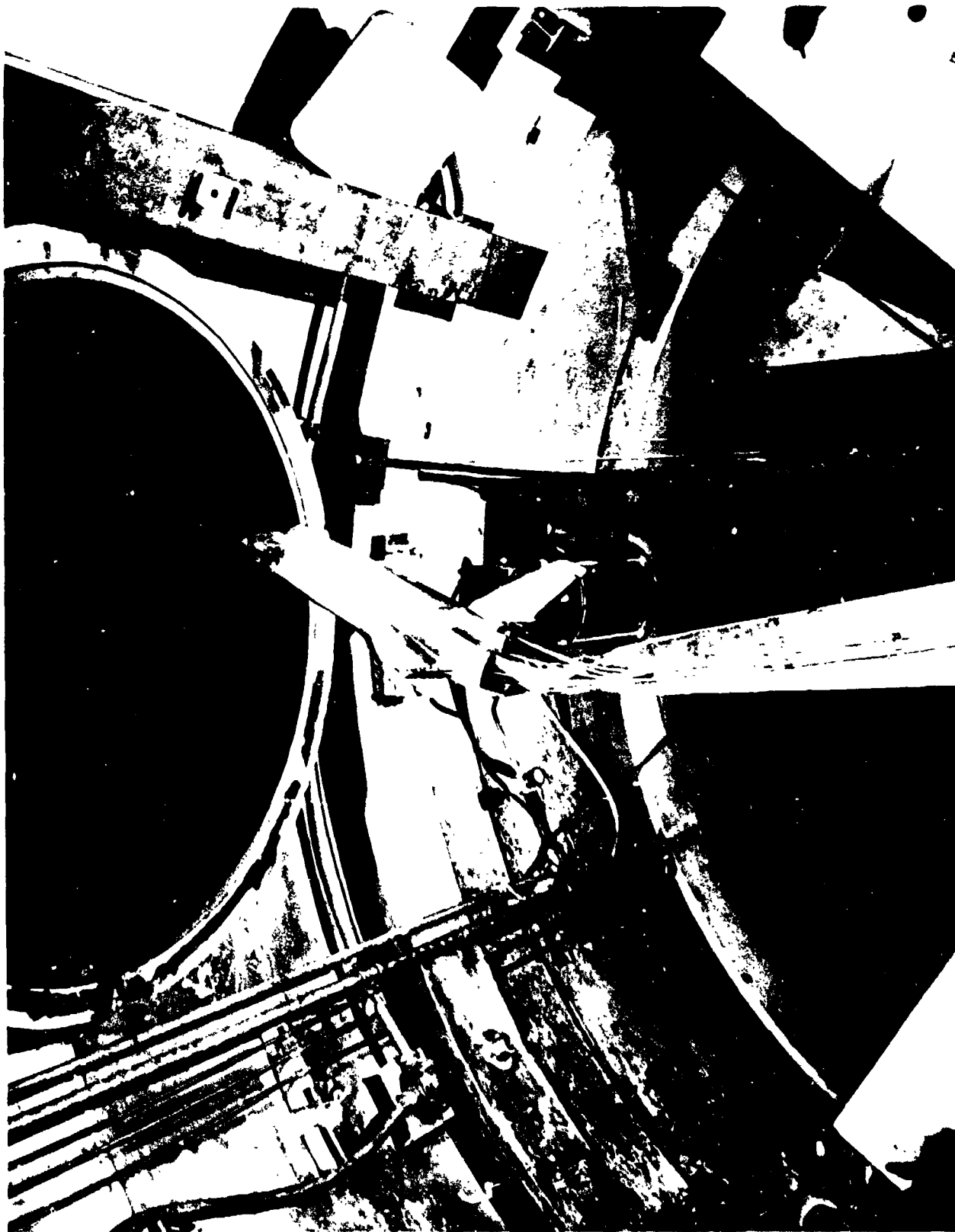
(a) Close-up 3/4 rear view of model 140 A/B

Figure 3. - Model photographs.



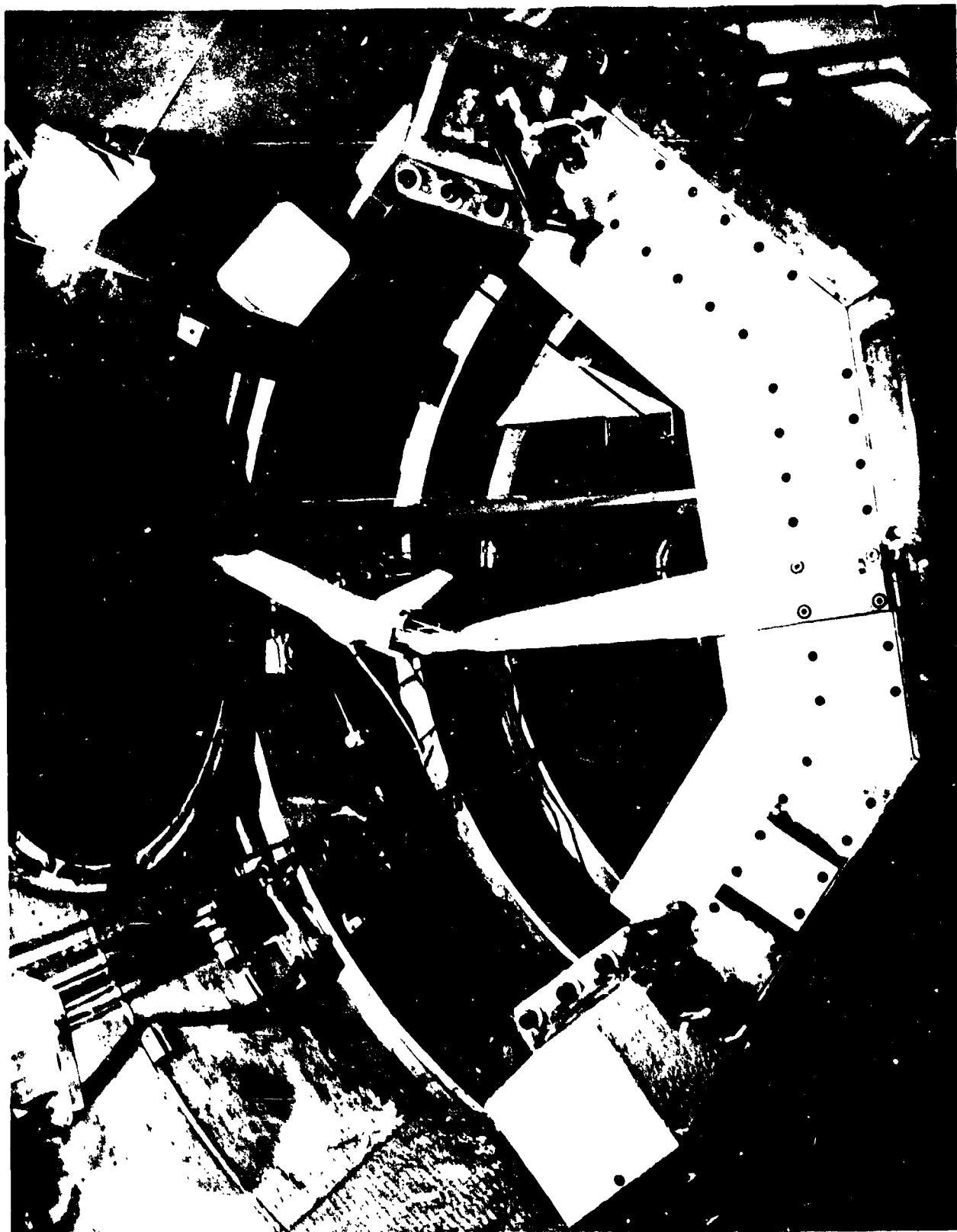
(b) Close-up rear view of model 140 A/B

Figure 3. - Continued.



(c) Side view of model 140 A/B

Figure 3. - Continued.



(d) side view of model 140 A B, sting, and strut

Figure 3. - Continued.

DATA FIGURES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO04)	AVES 3.5-176 DAB7 140 A/B CRBITER	-40.000	55.000	.000	10.000	SREF 2690.0000 SQ.FT.
(BEFO01)	AVES 3.5-176 DAB7 140 A/B CRBITER	.000	55.000	.000	10.000	LREF 1290.3000 IN.
(BEFO03)	AVES 3.5-176 DAB7 140 A/B CRBITER	10.000	55.000	.000	10.000	BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

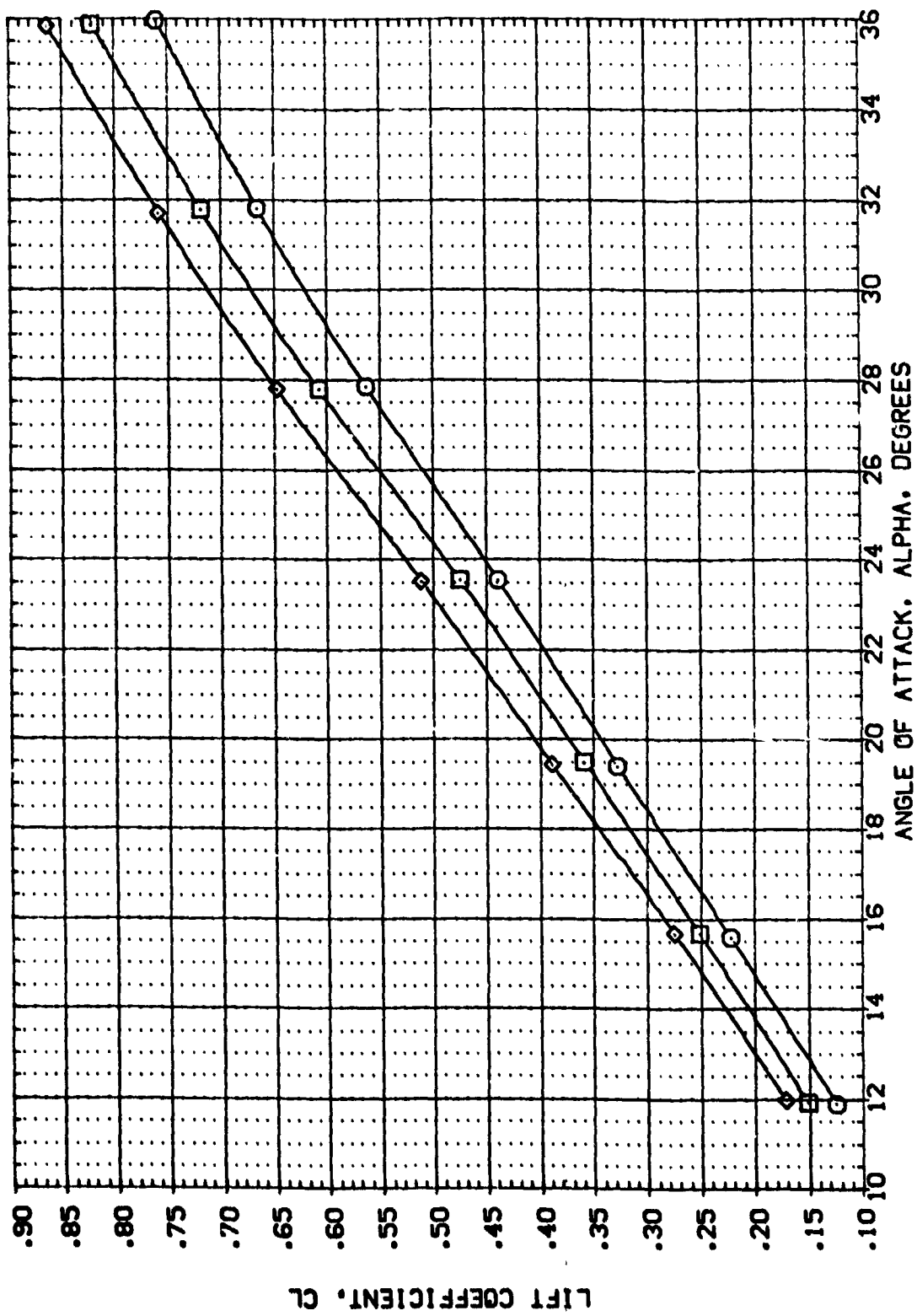


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0
 (A)MACH = 7.32

DATA SET SYMBOL. CONFIGURATION DESCRIPTION
 (BEFO01) AMES 3.5-176 0A87 140 A/B ORBITER
 (BEFO01) AMES 3.5-176 0A87 140 A/B ORBITER
 (BEFO03) AMES 3.5-176 0A87 140 A/B ORBITER

ELEVON SPOBRX BOFLAP RN/L
 -40.000 55.000 .000 10.000
 10.000 55.000 .000 10.000
 10.000 55.000 .000 10.000

REFERENCE INFORMATION
 SREF 2690.0000 50.FT.
 LREF 1290.0000 IN.
 BREF 936.6800 IN.
 XTRP 1076.4800 IN.
 YTRP 375.0000 IN.
 ZTRP 0.0000 IN.
 SCALE .0150

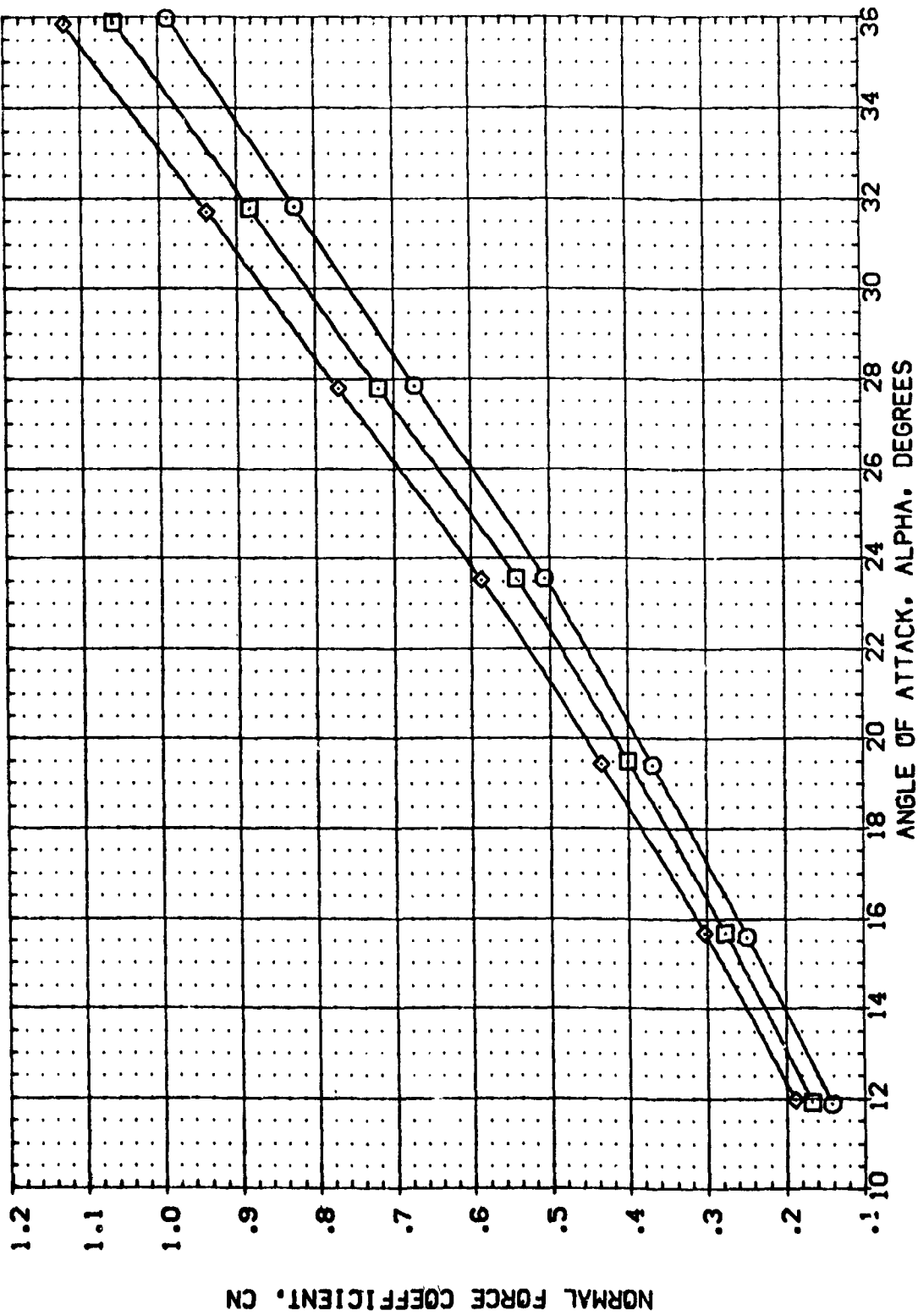


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO04)	AVES 3.5-176 0A87 140 A/B 08BITER	-40.000	55.000	.000	10.000	SREF 2690.0000 SQ.FT.
(BEFO03)	AVES 3.5-176 0A87 140 A/B 08BITER	.000	55.000	.000	10.000	LREF 1790.3000 IN.
		10.000	55.000	.000	10.000	BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

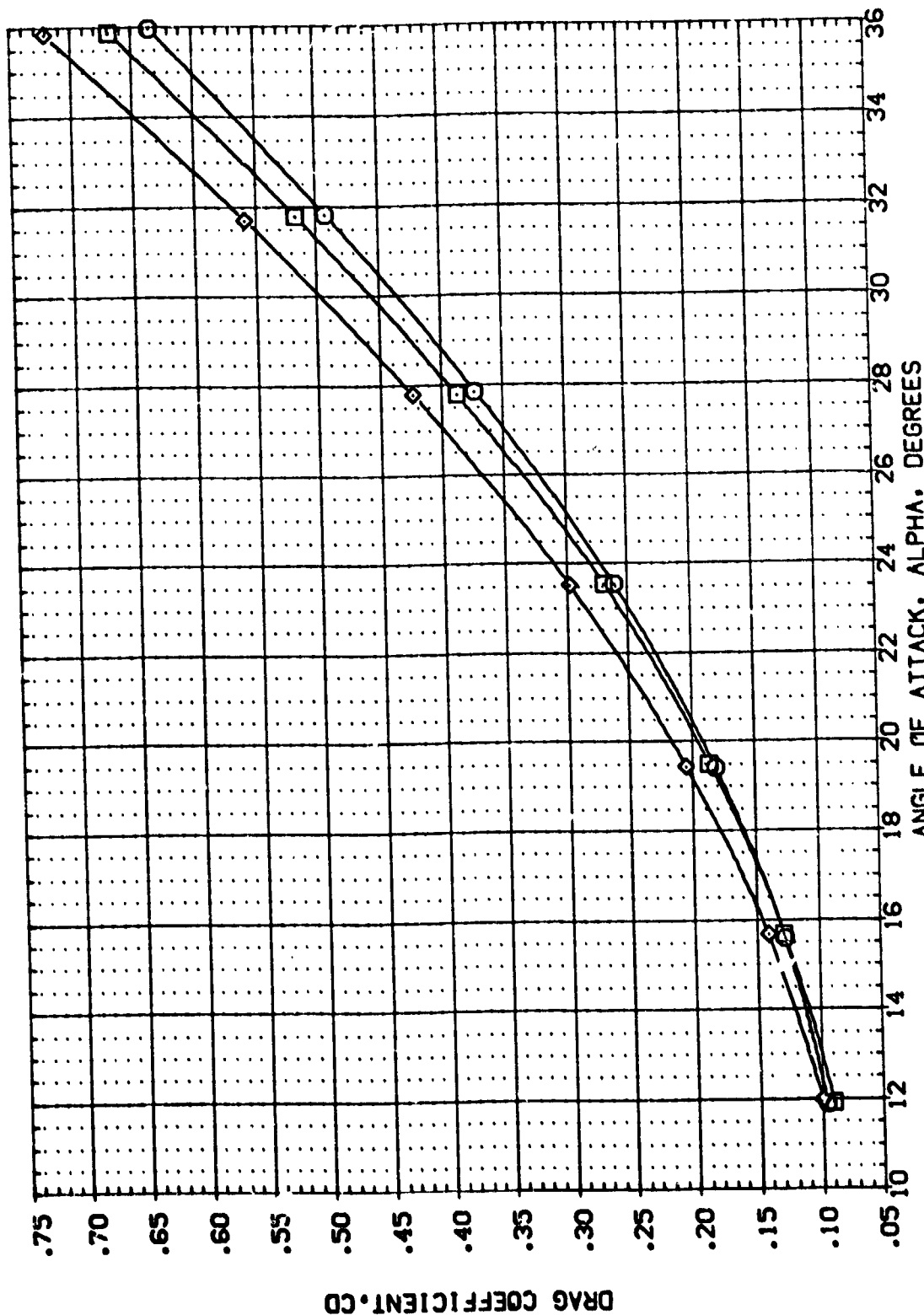


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	B FLAP	RN/L	REFERENCE INFORMATION
(BEF004)	AVES 3.5-176 DAB7 140 A/B ORBITER	-40.000	55.000	.000	10.000	SREF 2690.0000 SQ.FT.
(BEF001)	AVES 3.5-176 DAB7 140 A/B ORBITER	.000	55.000	.000	10.000	LREF 1290.3000 IN.
(BEF003)	AVES 3.5-176 DAB7 140 A/B ORBITER	10.000	55.000	.000	10.000	BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

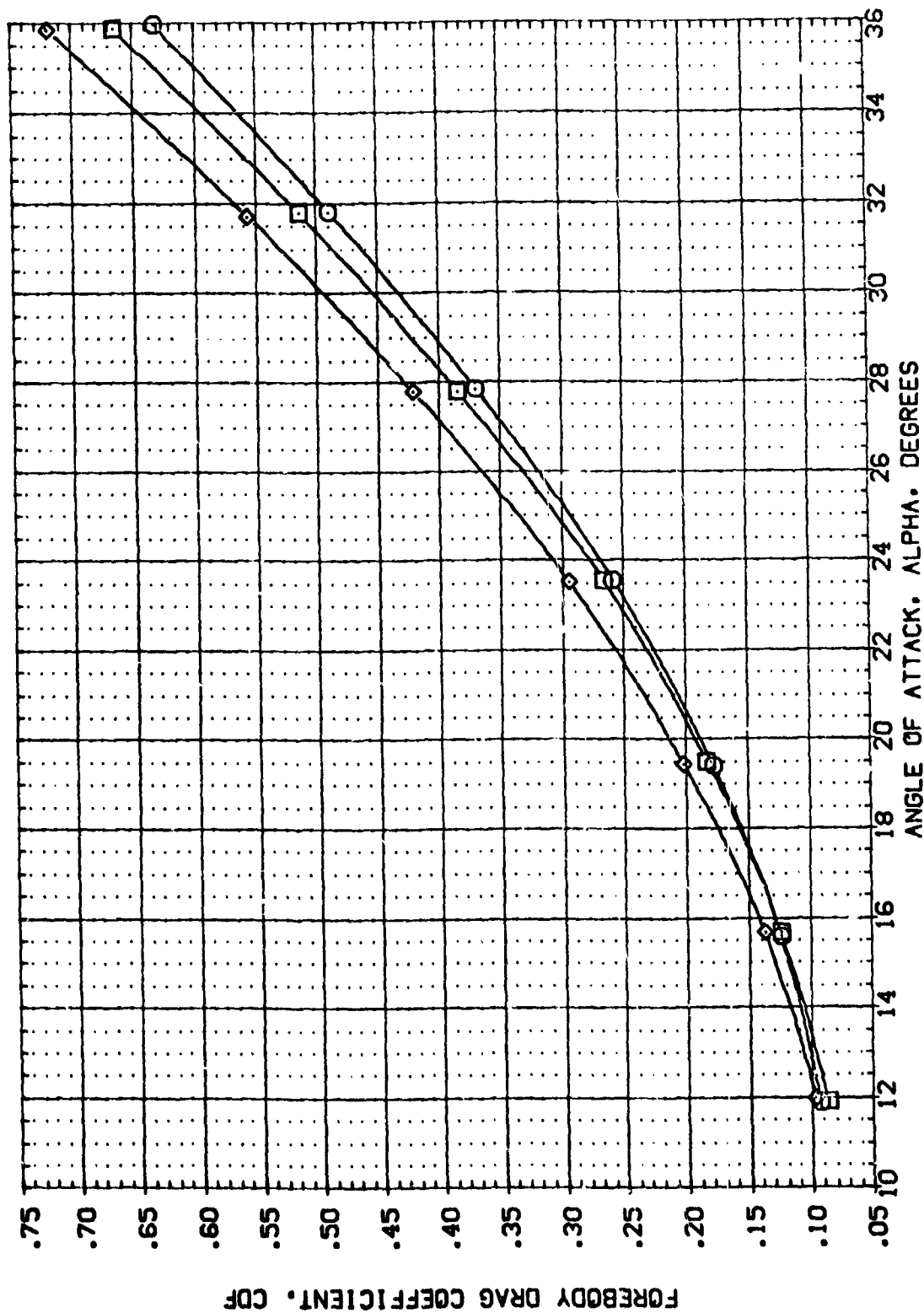


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFOO1)	AMES 3.5-176 OAS7 140 A/B ORBITER	-40.000	55.000	.000	10.000	SREF 2690.0000 SQ.FT.
(BEFOO2)	AMES 3.5-176 OAS7 140 A/B ORBITER	.000	55.000	.000	10.000	LREF 1290.3000 IN.
(BEFOO3)	AMES 3.5-176 OAS7 140 A/B ORBITER	10.000	55.000	.000	10.000	BREF 936.6800 IN.
						XREF 1076.4800 IN.
						YREF 375.0000 IN.
						ZREF .0150 IN.
						SCALE

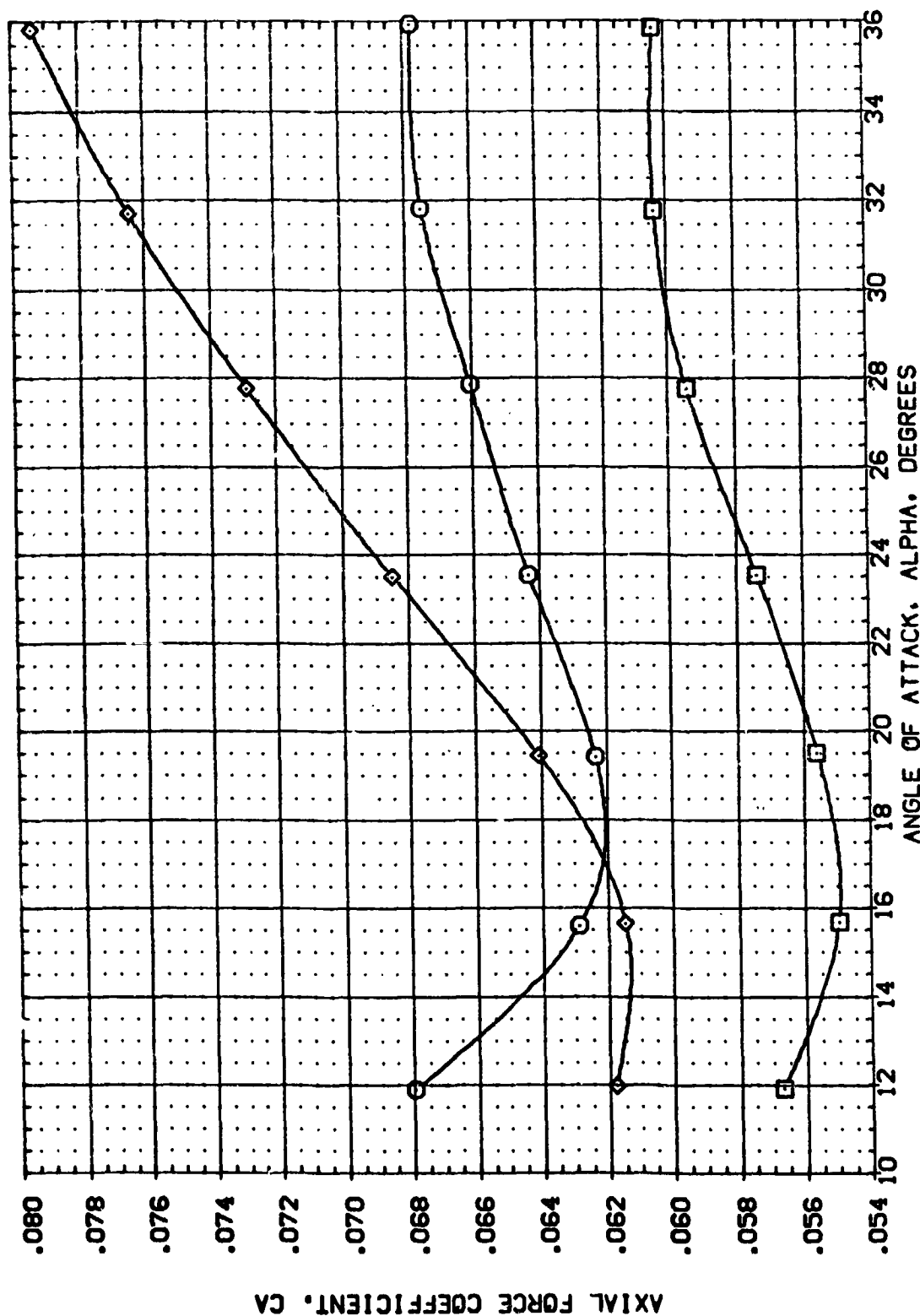


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF004)	AMES 3-5-176 D487 140 A/B CR81TER	-40.000	55.000	.000	10.000	SREF 2630.0000 SQ.FT.
(BEF001)	AMES 3-5-176 D437 140 A/B CR81TER	.000	55.000	.000	10.000	LREF 1290.3000 IN.
(BEF003)	AMES 3-5-176 D487 140 A/B CR81TER	10.000	55.000	.000	10.000	BREF 336.6800 IN.
						XREF 1075.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

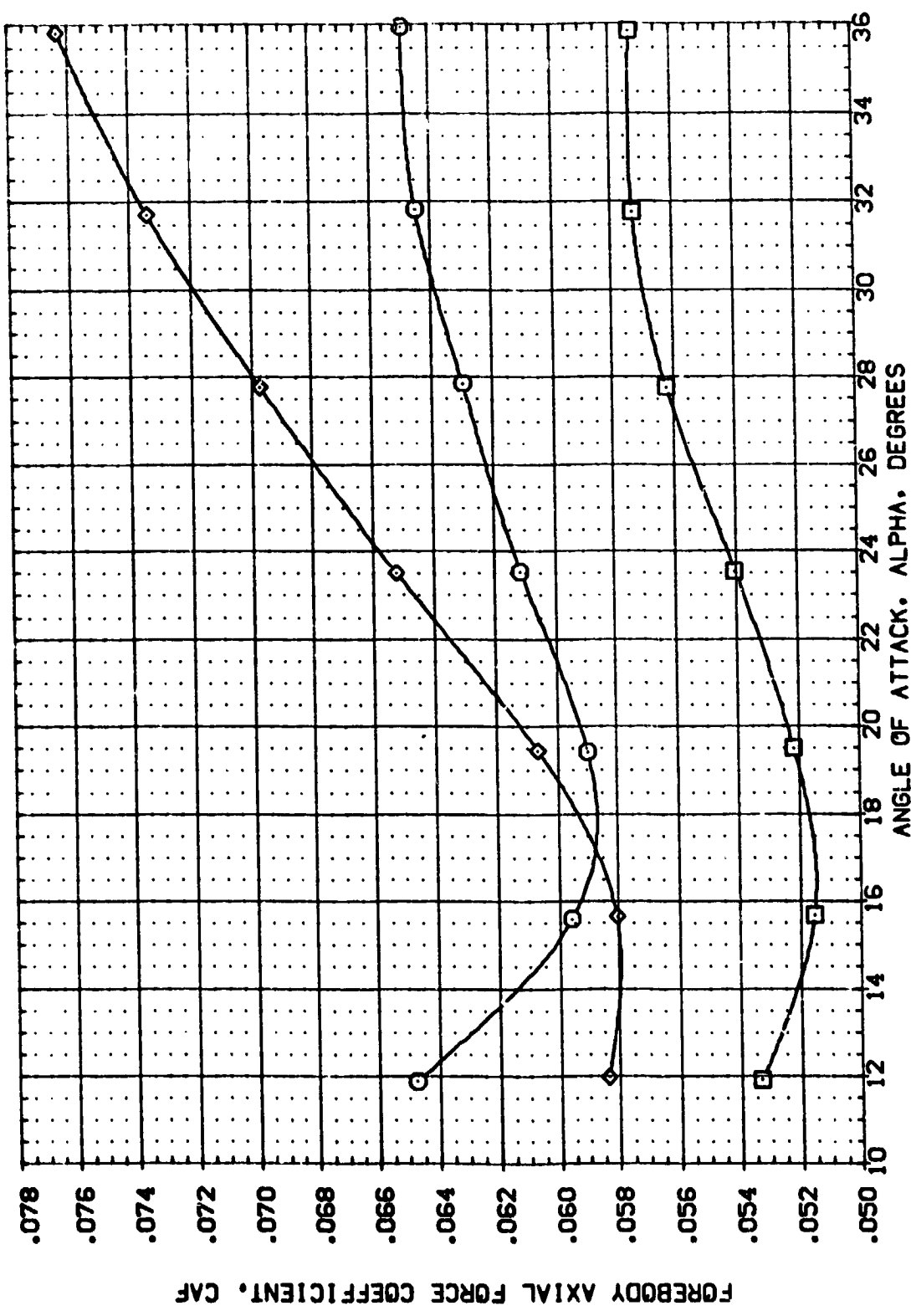


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=0.0
(A)MACH = 7.32

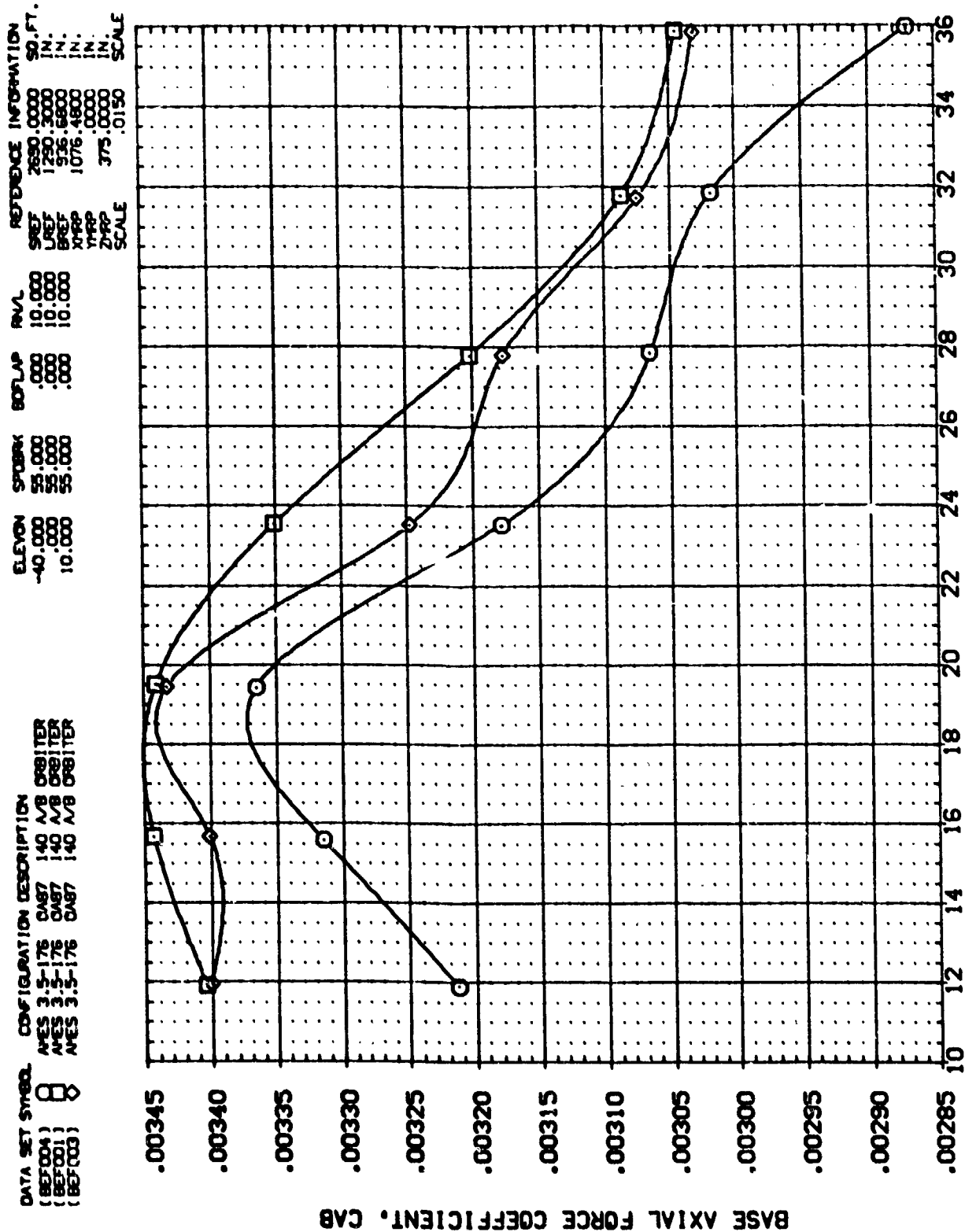


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMOL	CONFIGURATION DESCRIPTION	ELEVON	SPORON	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO04)	AVES 3.5-176 OAG7 140 A/B ORBITER	-40.000	99.000	.000	10.000	SREF 2630.0000 SQ.FT.
(BEFO01)	AVES 3.5-176 OAG7 140 A/B ORBITER	.000	99.000	.000	10.000	LREF 1290.3000 IN.
(BEFO03)	AVES 3.5-176 OAG7 140 A/B ORBITER	10.000	99.000	.000	10.000	SREF 535.6800 IN.
						XREF 1076.4800 IN.
						YREF 375.0000 IN.
						ZREF .0150 SCALE

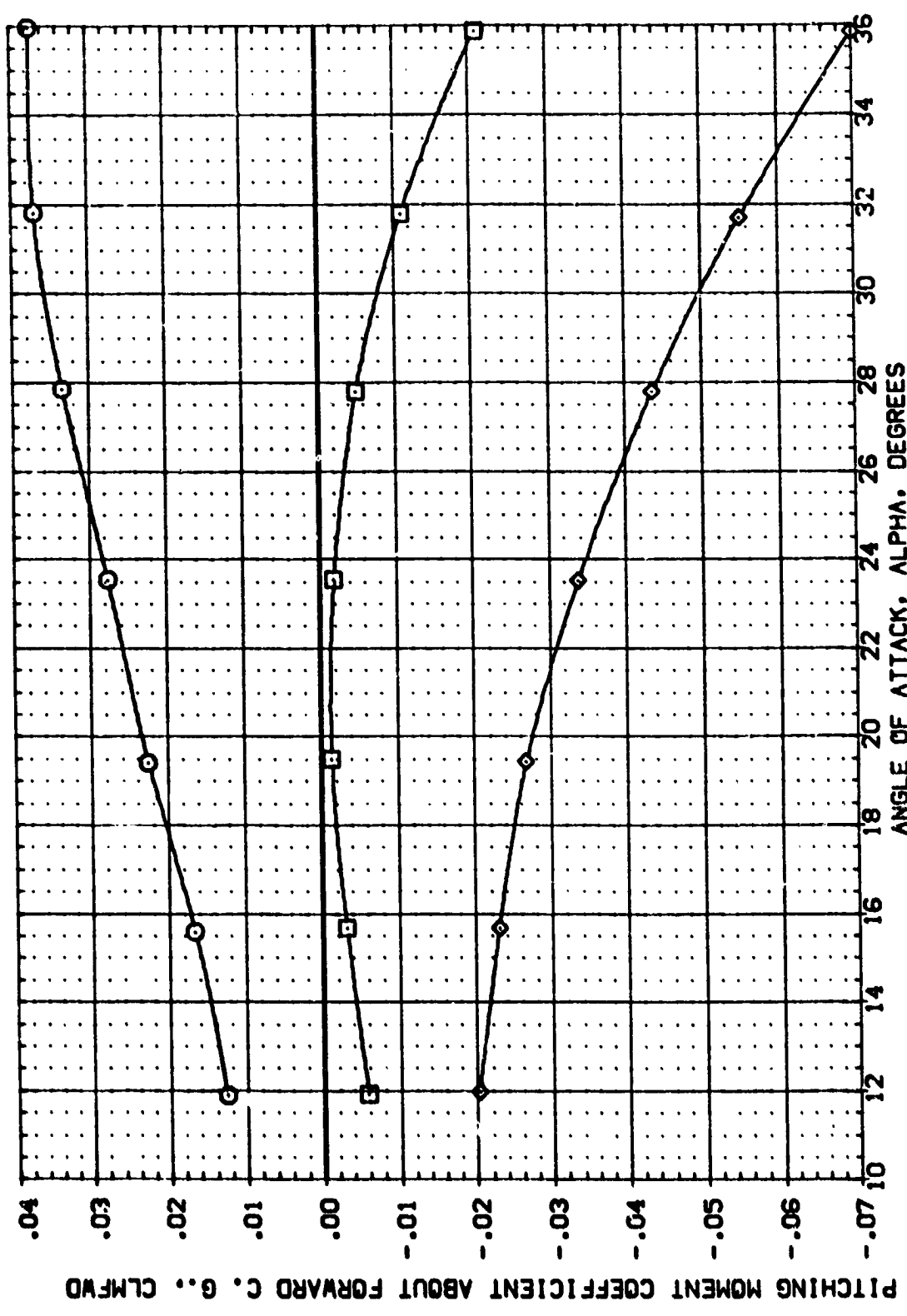


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	FLEVEN	SPDRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF004)	AMES 3.5-176 OMB7 140 A/B OMBITER	-40.000	55.000	.000	10.000	SREF 2500.0000 SQ.FT.
(BEF001)	AMES 3.5-176 OMB7 140 A/B OMBITER	10.000	55.000	.000	10.000	LREF 1200.0000 IN.
(BEF003)	AMES 3.5-176 OMB7 140 A/B OMBITER					BREF 926.6800 IN.
						YREF 1076.4800 IN.
						ZREF 375.0000 IN.
						SCALE .0150

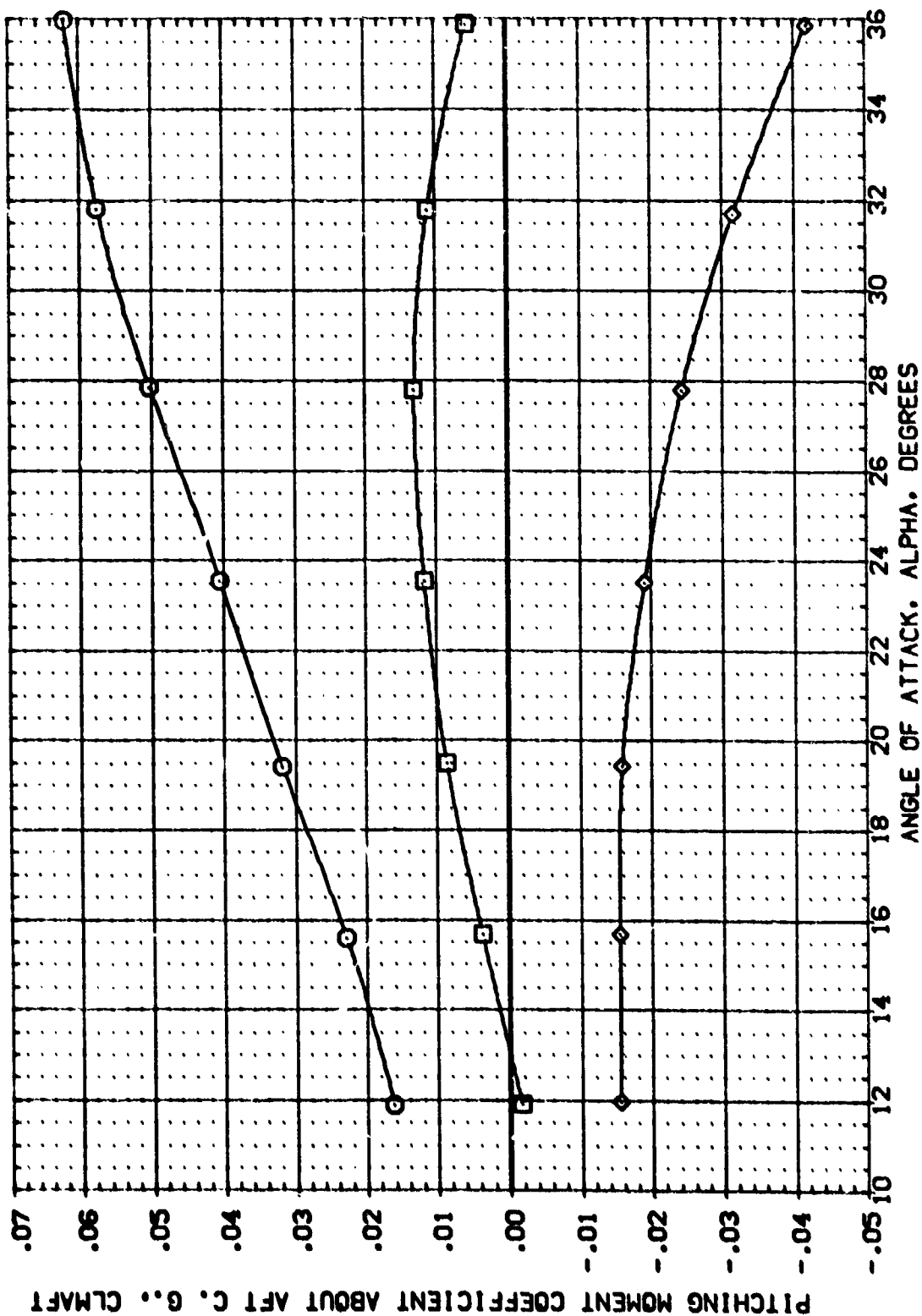


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORON	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFO04)	AVES 3.5-176 D467 140 A/B ORBITER	-40.000	55.000	.000	10.000	SREF 2650.0000 50.FT.
(BEFO01)	AVES 3.5-176 D467 140 A/B ORBITER	.000	55.000	.000	10.000	LREF 1250.3000 IN.
(BEFO03)	AVES 3.5-176 D467 140 A/B ORBITER	10.000	55.000	.000	10.000	BREF 936.6800 IN.
						X-REF 1076.4800 IN.
						Y-REF .0000 IN.
						Z-REF 375.0000 IN.
						SCALE .0150 SCALE

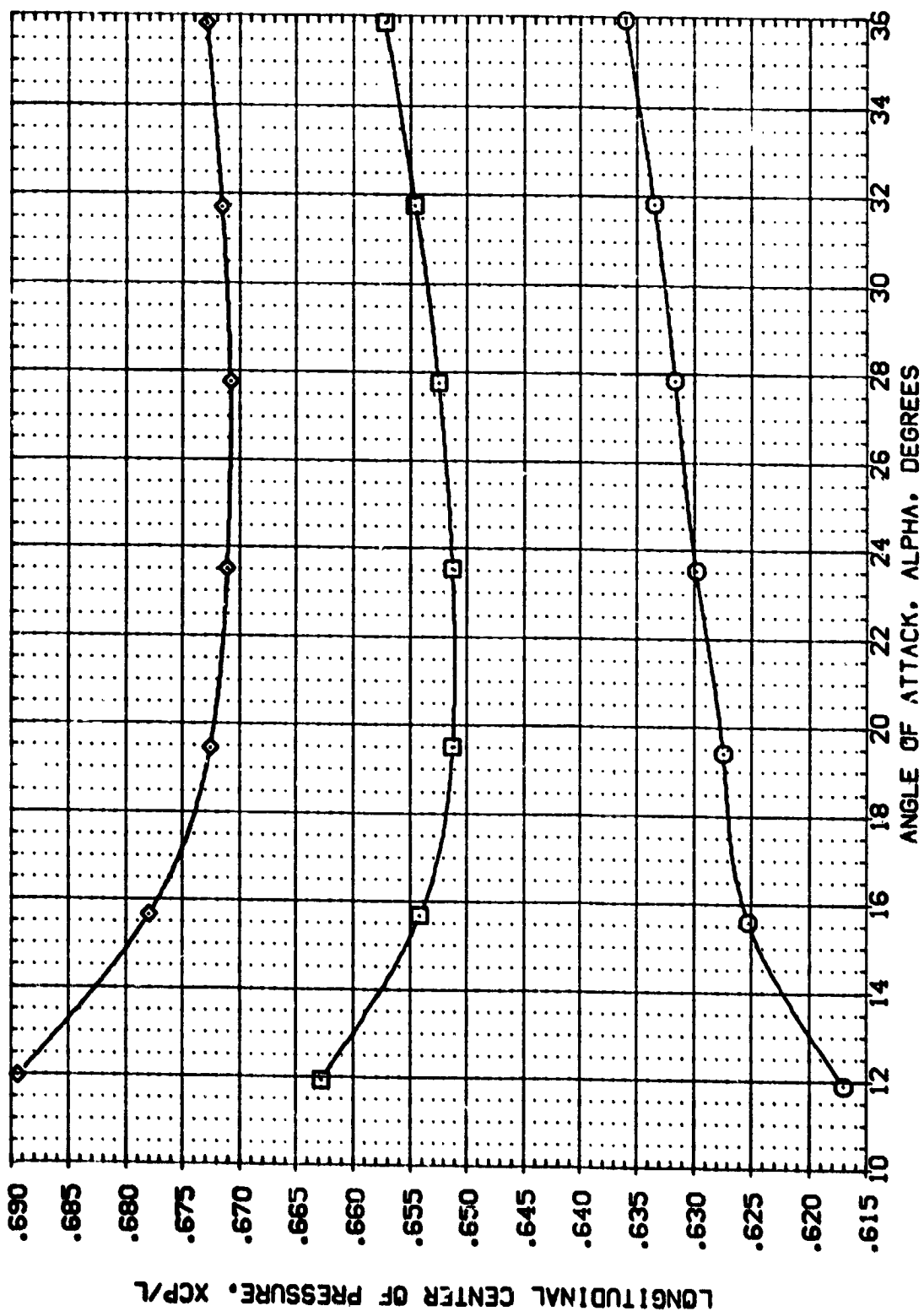


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=0.0

[A]MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORON	ROFLAP	RVL	REFERENCE INFORMATION
(REF004)	WES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	.000	10.000	SREF 2650.0000 SQ.FT.
(REF001)	WES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	.000	10.000	UREF 1250.0000 IN.
(REF003)	WES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	.000	10.000	BREF 93.6800 IN.
						YREF 1076.1800 IN.
						ZREF 375.0000 IN.
						SCALE .0150

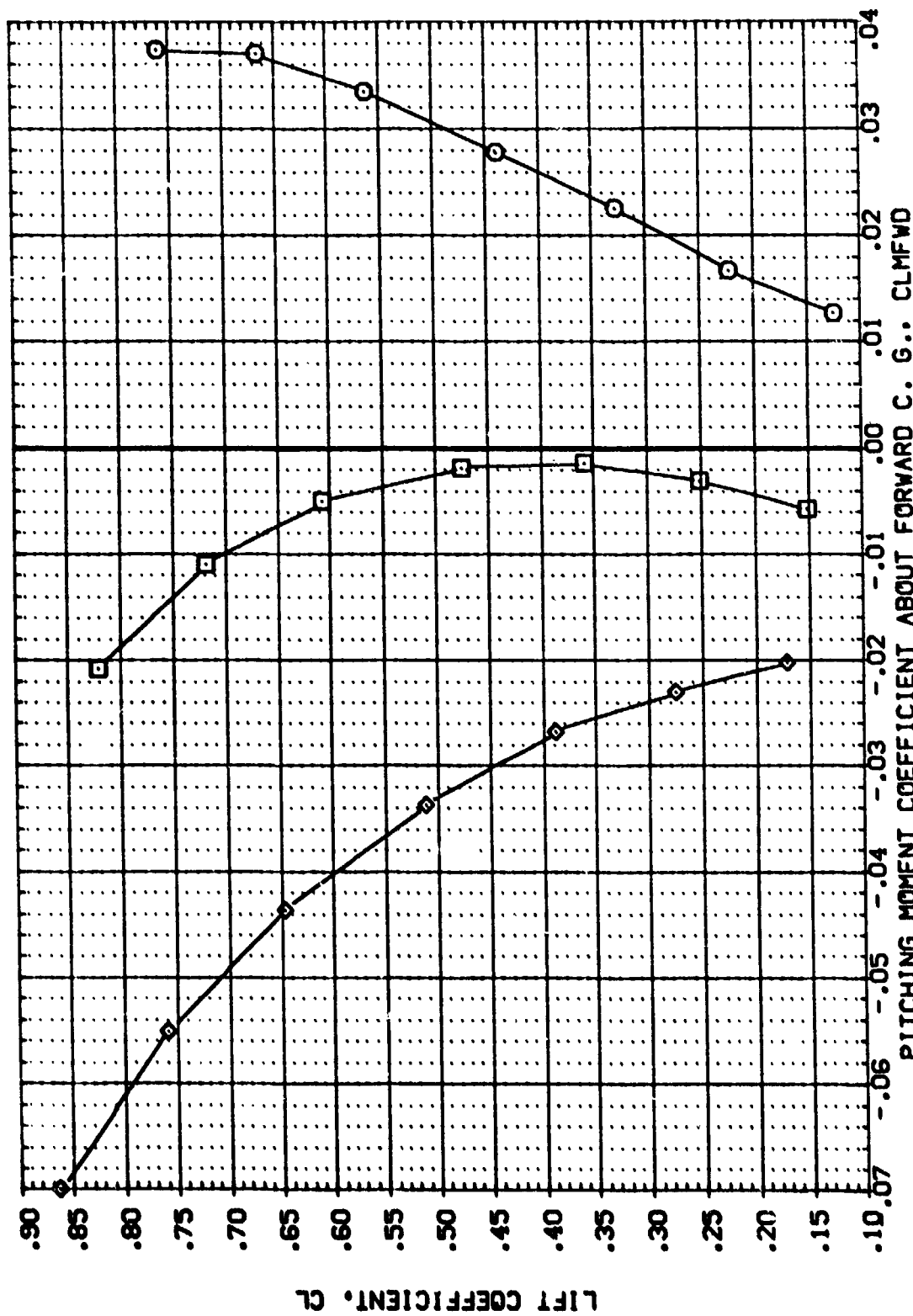


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	BDFLAP	RN/L	REFERENCE INFORMATION
(REF004)	AVES 3.5-176 DAG7 140 A/B DB/ITER	-40.000	55.000	.000	10.000	SREF 2680.0000 SQ.FT.
(REF001)	AVES 3.5-176 DAG7 140 A/B DB/ITER	.000	55.000	.000	10.000	LREF 1250.3000 IN.
(REF003)	AVES 3.5-176 DAG7 140 A/B DB/ITER	10.000	55.000	.000	10.000	BREF 536.6800 IN.
						XREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

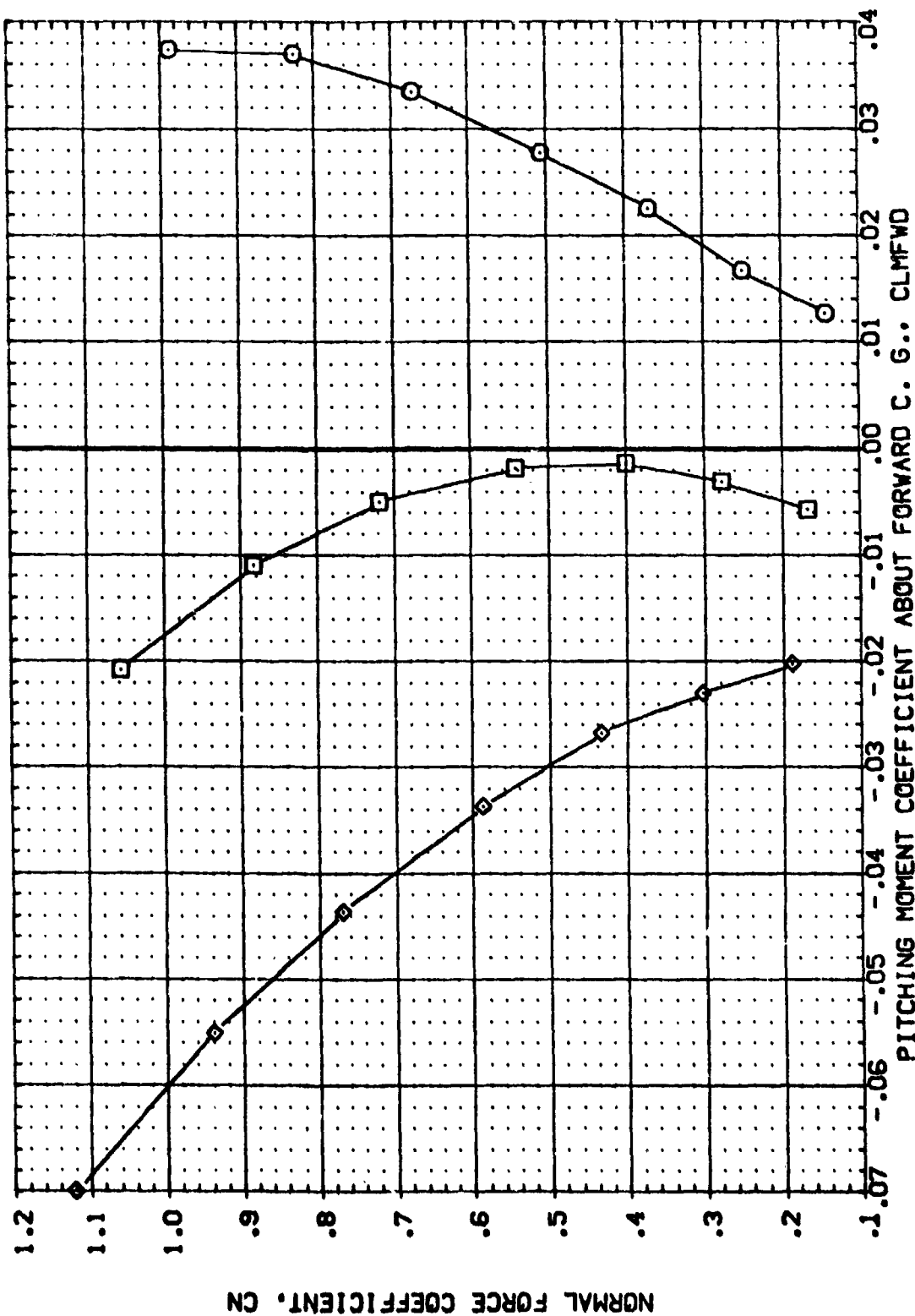


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFOO4)	AVES 3.5-176 DAB7 140 A/B CRBITER	-40.000	55.000	.000	10.000	SREF 2690.0000 SQ.FT.
(BEFOO1)	AVES 3.5-176 DAB7 140 A/B CRBITER	.000	55.000	.000	10.000	LREF 1290.3000 IN.
(BEFOO3)	AVES 3.5-176 DAB7 140 A/B CRBITER	10.000	55.000	.000	10.000	BREF 936.6800 IN.
						YMRP 1076.4800 IN.
						ZMRP .0000 IN.
						SCALE 375.0000 IN.
						.0150

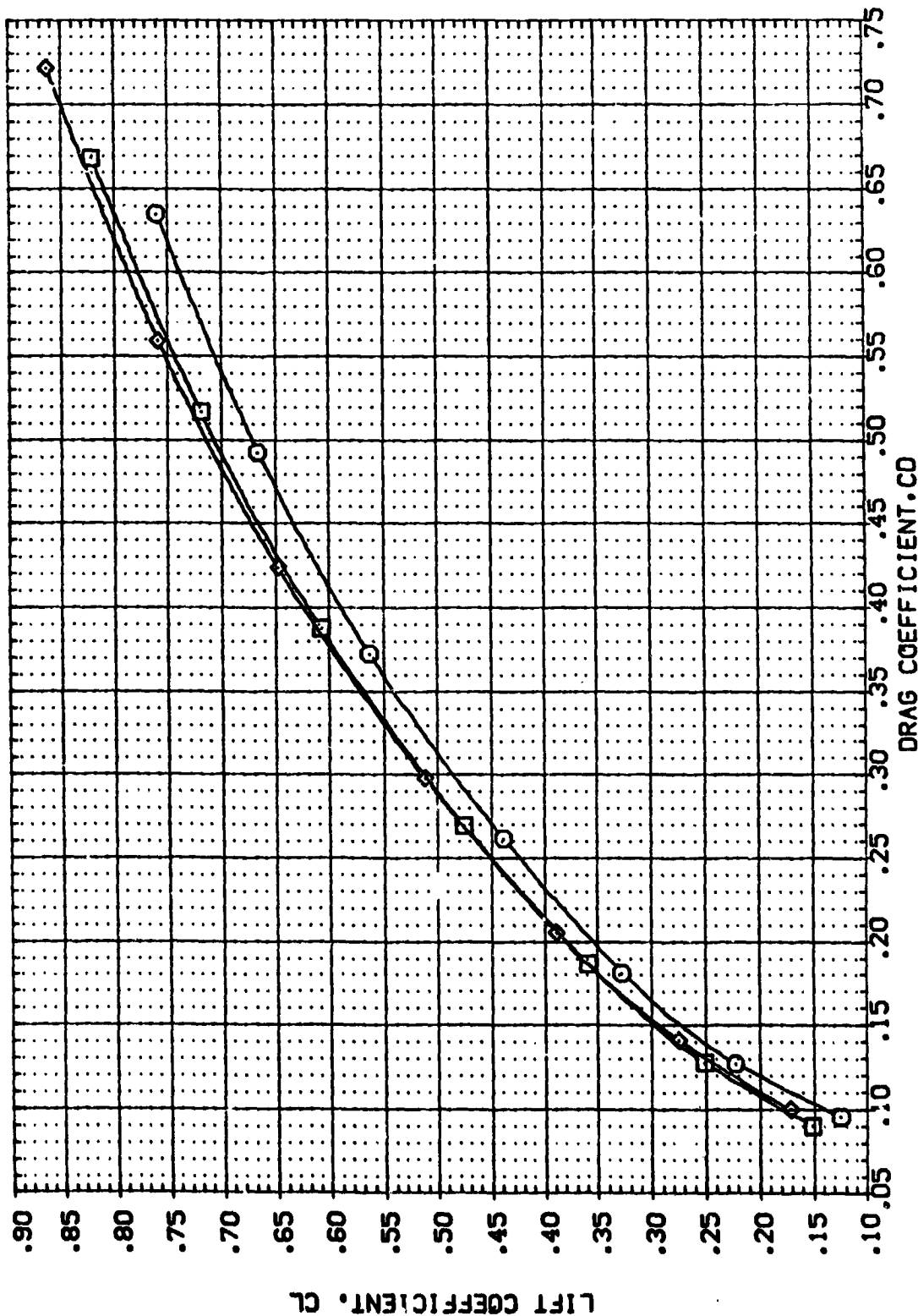


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	BOFLAP	RN/L	REFERENCE INFORMATION
(AETD04)	AMES 3-5-176 DAB7 140 A/B DBBITER	-40.000	55.000	.000	10.000	SREF 2650.0000 SQ.FT.
(AETD01)	AMES 3-5-176 DAB7 140 A/B DBBITER	.000	55.000	.000	10.000	LREF 1250.3000 IN.
(AETD03)	AMES 3-5-176 DAB7 140 A/B DBBITER	10.000	55.000	.000	10.000	BREF 936.5800 IN.
						XREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

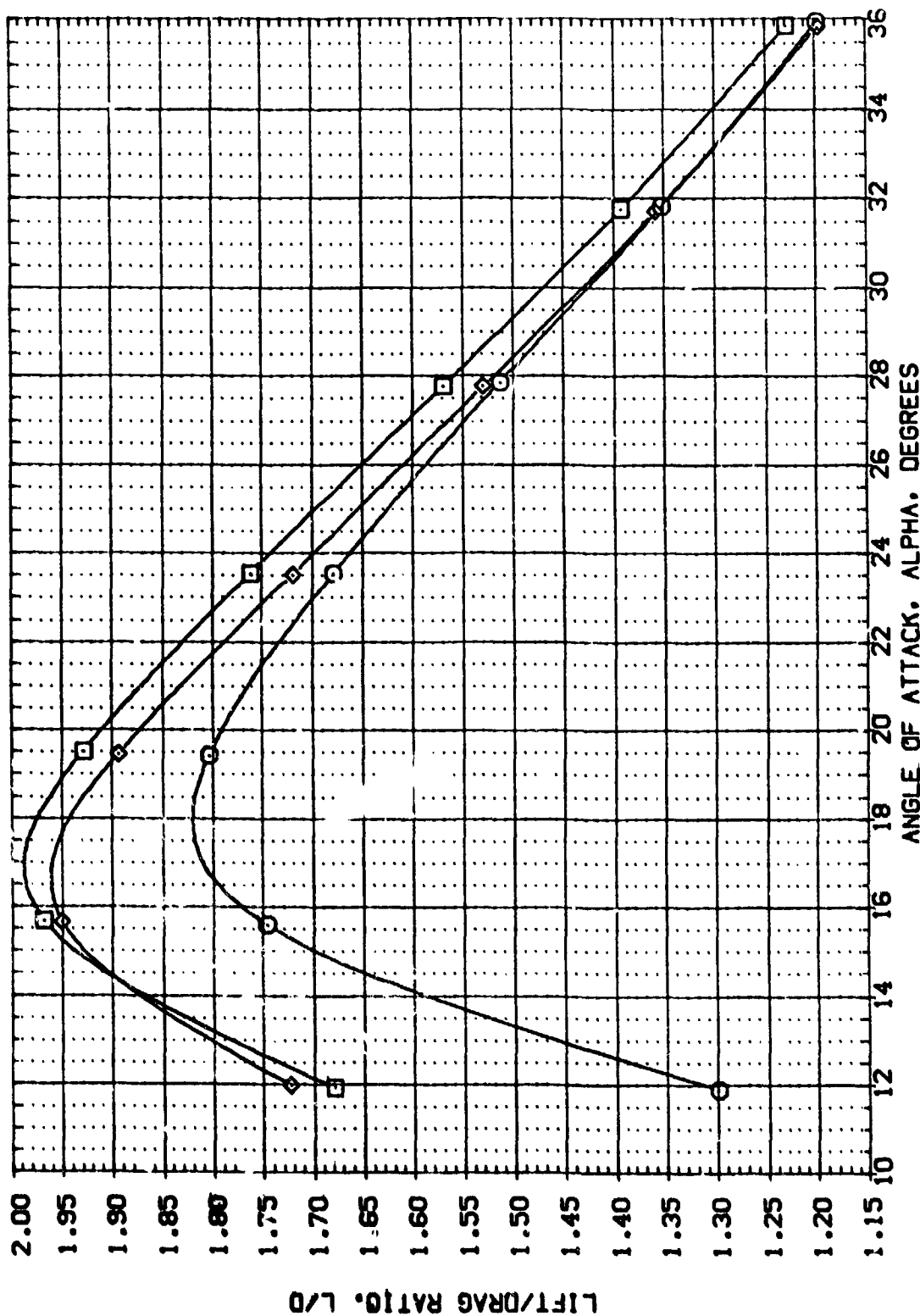
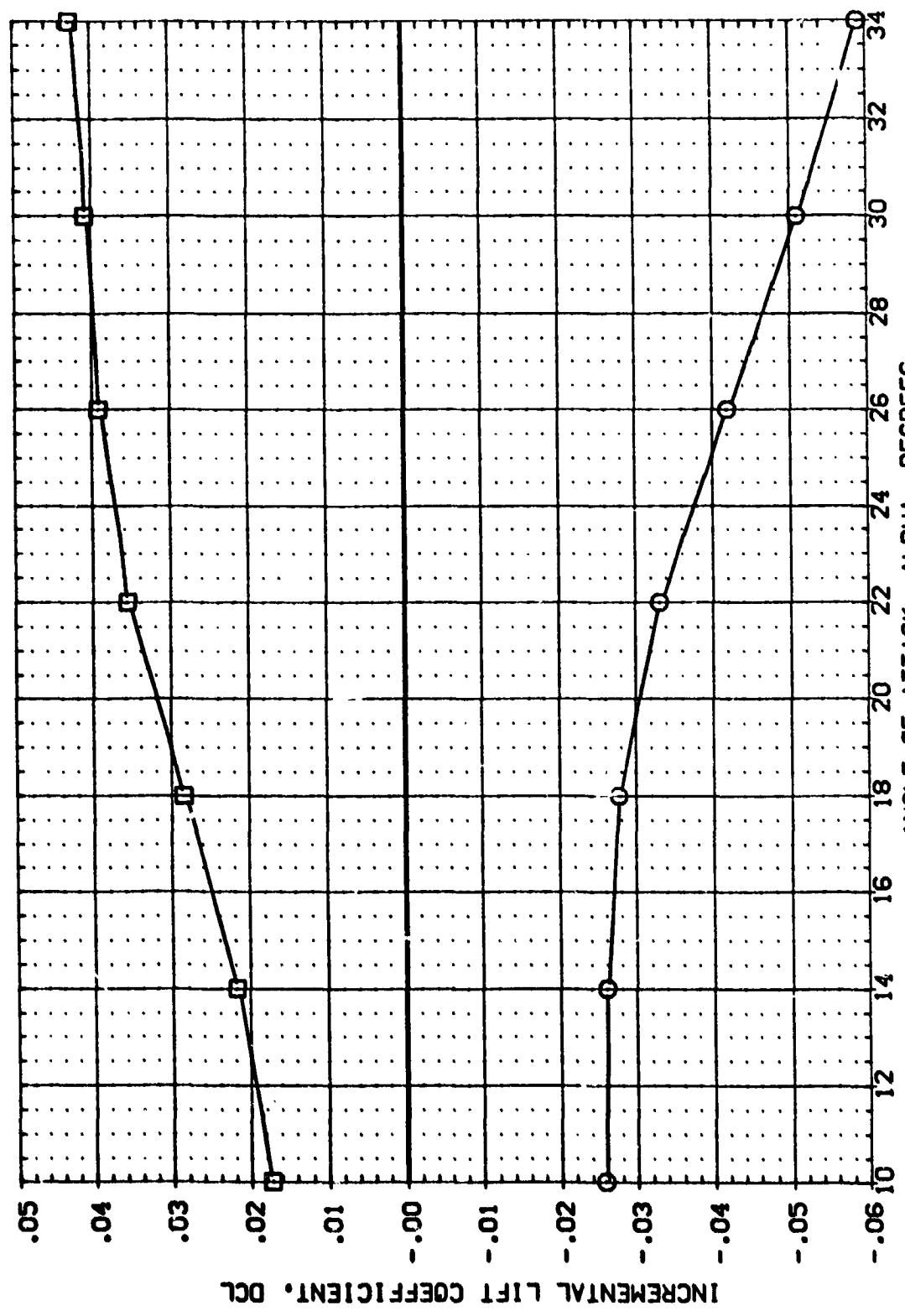


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION				DE		SPDRK		BDFLAP		RN/L		REFERENCE INFORMATION			
(EEFD04)	□	AVES 3.5-176	DA87	140	A/B	CR81TER	-40.000	55.000	.000	10.000	SREF	2650.0000	50.FT.				
(EEFD03)	□	AVES 3.5-176	DA37	140	A/B	CR81TER	10.000	55.000	.000	10.000	LRREF	1250.3000	IN.				
											XRREF	936.6800	IN.				
											YMRP	1076.4800	IN.				
											ZMRP	.0000	IN.				
											SCALE	375.0000	IN.				
													SCALE				



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (EF004) ☐ ASES 3.5-176 0A87 140 A/B 088/ITER
 (EF003) ☐ ASES 3.5-176 0A87 140 A/B 088/ITER

DE SPDRK BOFLAP RN/L
 -40.000 55.000 .000 10.000
 10.000 55.000 .000 10.000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 1290.3000 IN.
 BREF 936.6900 IN.
 XMRP 1076.4800 IN.
 YMRP 375.0000 IN.
 ZMRP .0150 IN.
 SCALE

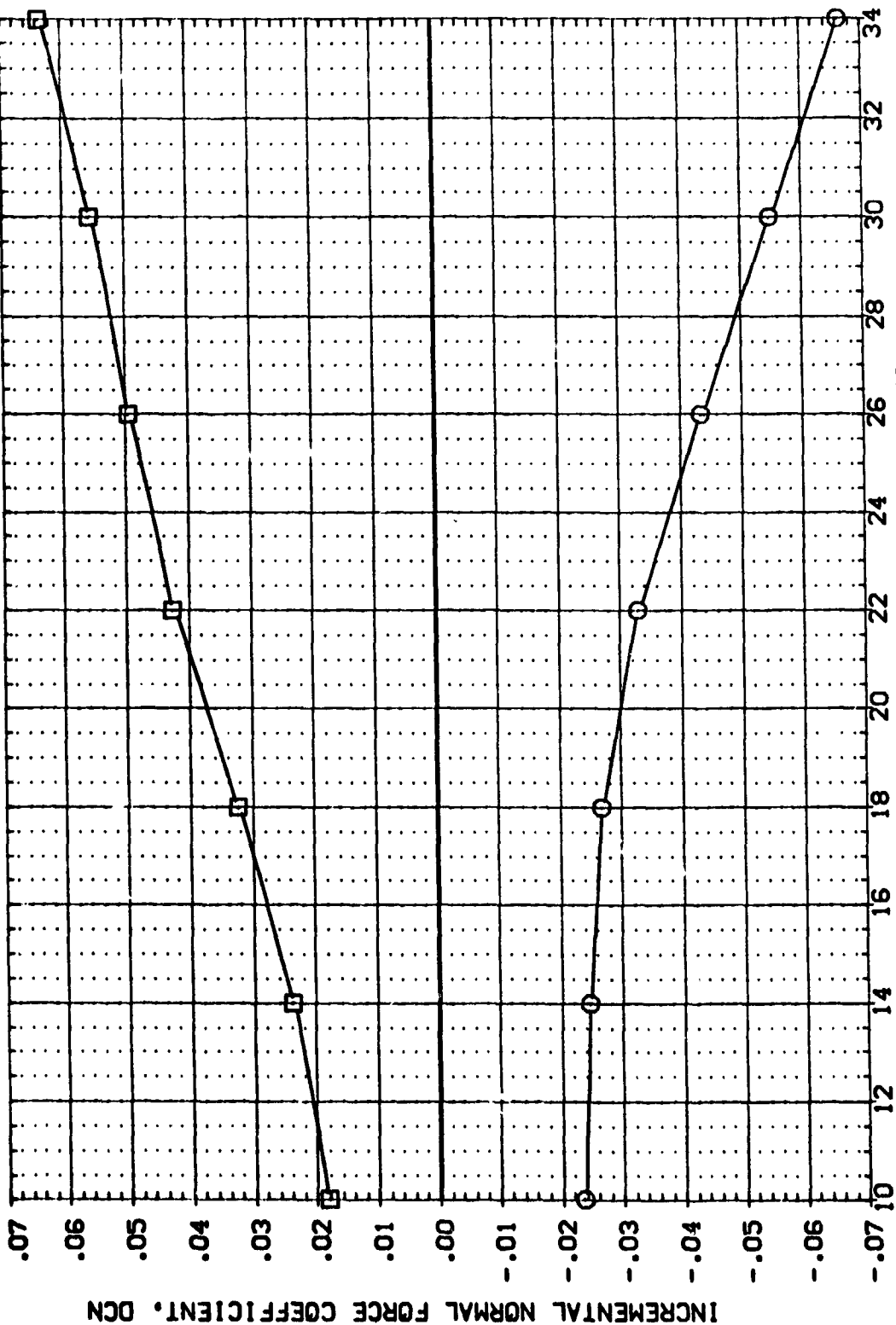


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		REFERENCE INFORMATION	
(EEF004)	□	AMES 3.5-176	DA87 140 A/B DB81TER	SREF	2630.0000 SQ.FT.
(EEF003)	□	AMES 3.5-176	DA87 140 A/B DB81TER	LREF	1290.3000 IN.
				BREF	936.6800 IN.
				YREF	1076.4800 IN.
				ZREF	375.0000 IN.
				SCALE	.0150

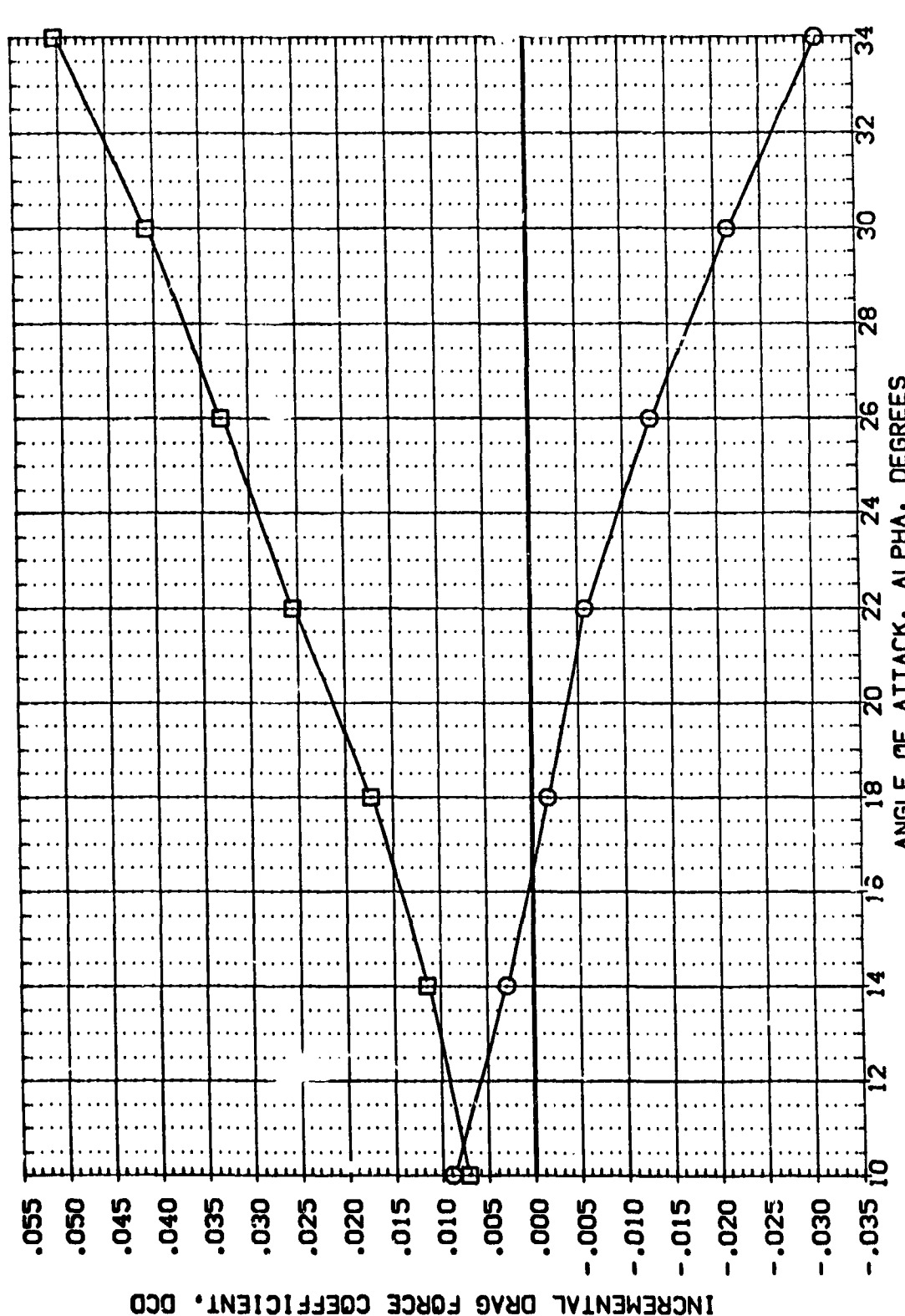


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0
(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BD FLAP	RN/L	REFERENCE INFORMATION
(EEF004)	AMES 3.5-176 DAB7 140 A/B ORBITER	-40.000	55.000	.000	10.000	SREF 2590.0000 SO.FT.
(EEF003)	AMES 3.5-176 DAB7 140 A/B ORBITER	10.000	55.000	.000	10.000	LREF 1250.3000 IN.
						BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

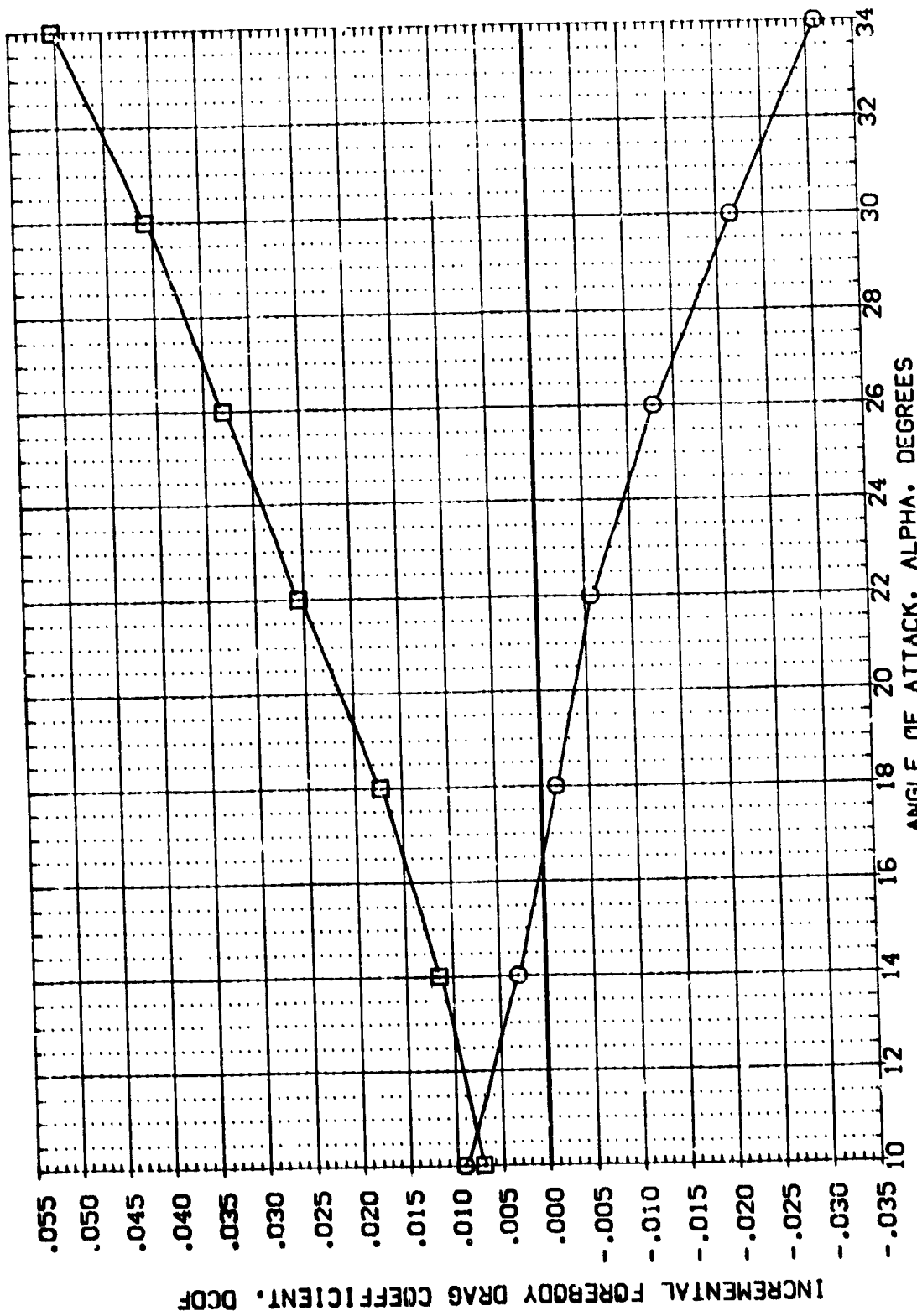


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BD FLAP=0.0
(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		DE		SPDRK		BDFLAP		RN/L		REFERENCE INFORMATION	
(EEFOO4)	□	AMES 3.5-176	QAB7 140 A/B ORBITER	-10.000	55.000	.000	10.000	SREF	2690.0000	50. FT.			
(EEFOO3)	□	AMES 3.5-176	QAB7 140 A/B ORBITER	10.000	55.000	.000	10.000	LREF	1290.3000	IN.			
								BREF	936.6800	IN.			
								XPRP	1076.4800	IN.			
								YPRP	.0000	IN.			
								ZPRP	375.0000	IN.			
								SCALE	.0150	SCALE			

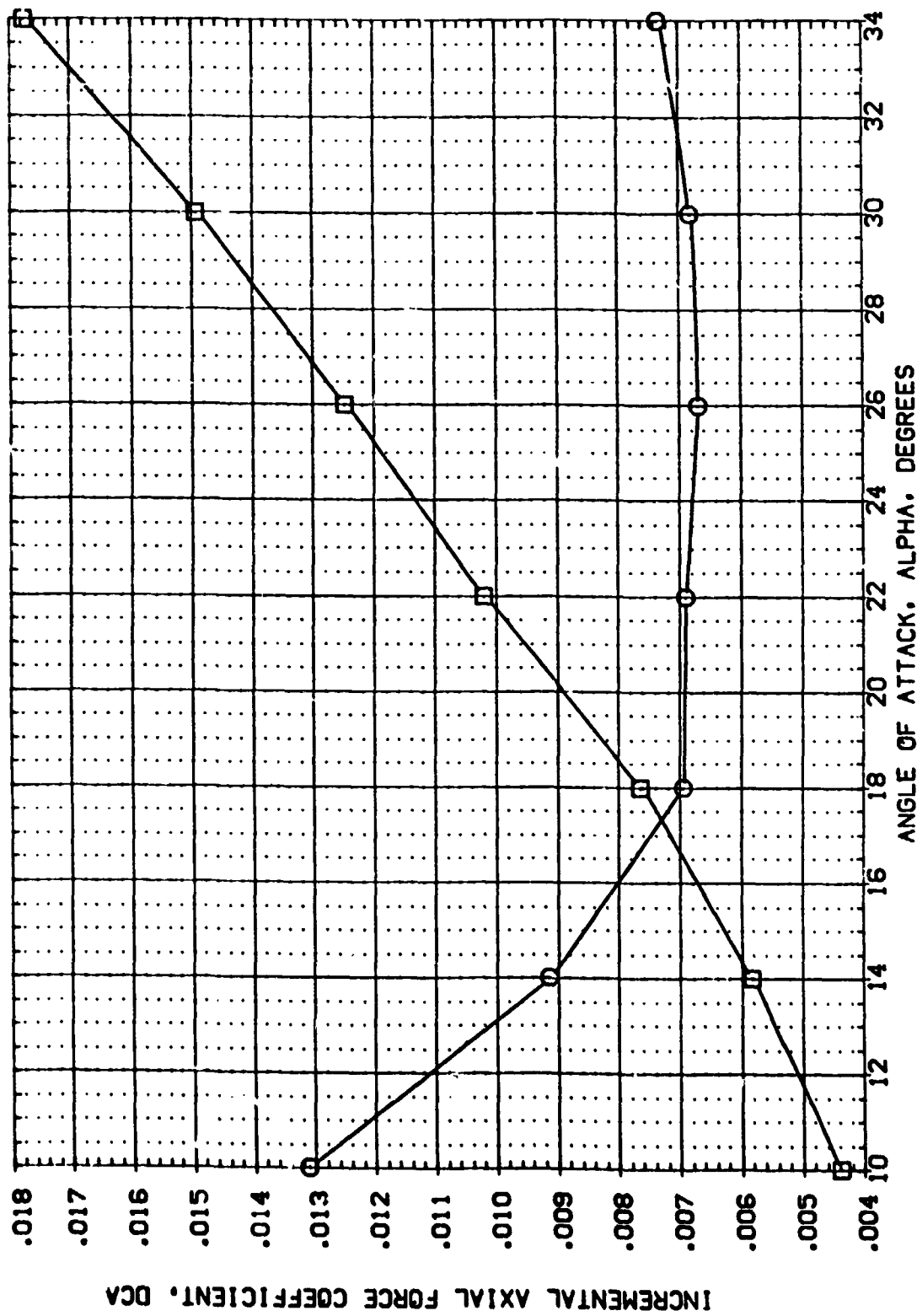


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(A)MACH = 7.32

REFERENCE INFORMATION		50. FT
SREF	2550	0000
LREF	1290	3000
REF	936	6800
XREF	1076	4800
YREF	0000	0000
ZREF	75	0000
SCALE		.0150



FIG. 4 ELEVON EFFECTIVENESS, $RN/L=10.$, $BDFLAP=0.0$

(A)MACH = 7.32

DATA SET SYMBOL: (EF004) **B** CONFIGURATION DESCRIPTION: ARES 3.5-176 DAG7 140 A/B ORBITER
 (EF003) ARES 3.5-176 DAG7 140 A/B ORBITER

DE: -40.000 10.000 SPDRK: 55.000 55.000 BOFLAP: .000 10.000 RN/L: 10.000 10.000

REFERENCE INFORMATION:
 SREF: 2690.0000 50. FT.
 LREF: 1290.3000 IN.
 BREF: 936.6800 IN.
 YREF: 1076.4800 IN.
 ZREF: .0000 IN.
 ZREF: 375.0000 IN.
 SCALE: .0150

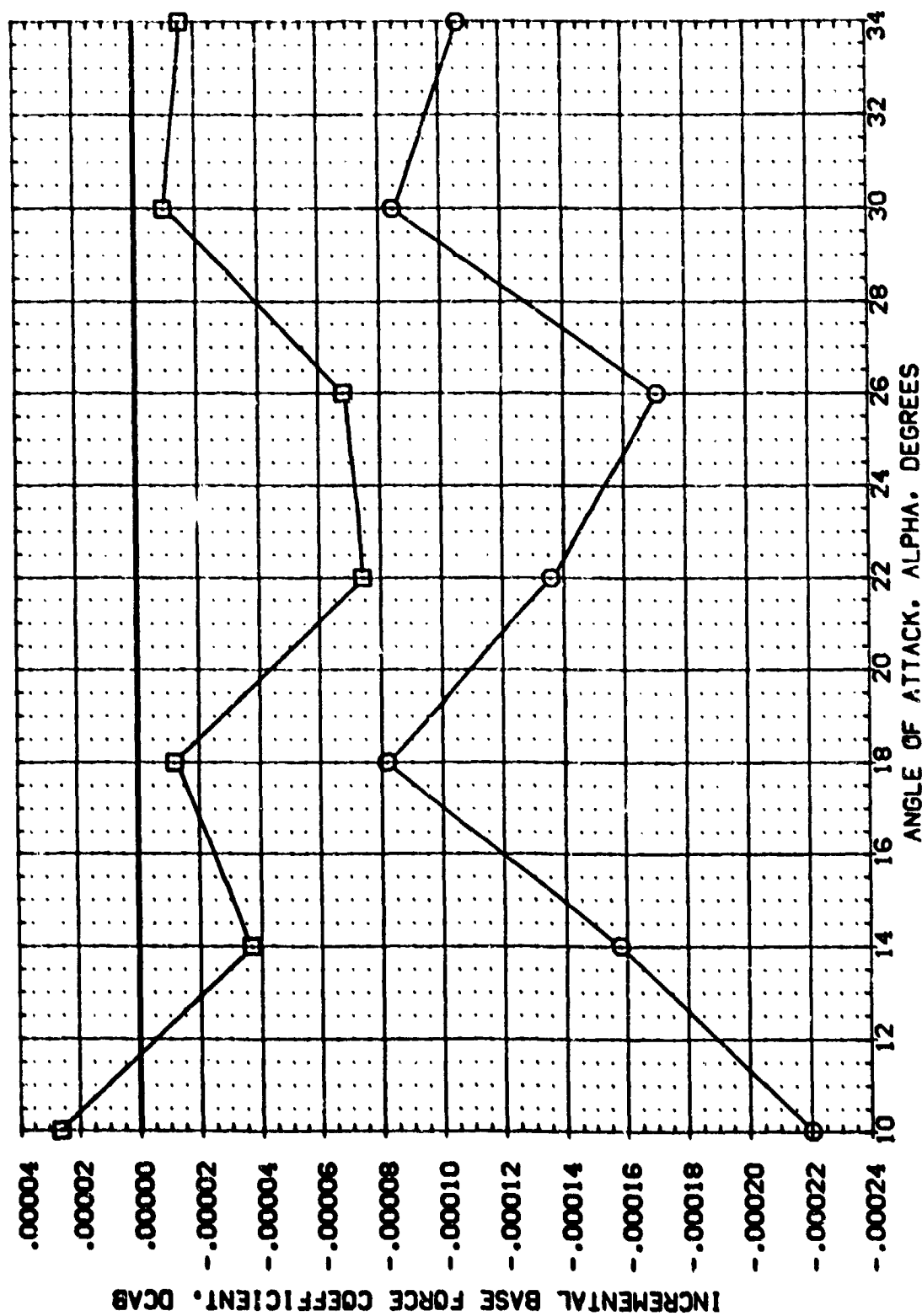


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=0.0

(A) MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBK	BDFLAP	RN/L	REFERENCE INFORMATION
(EEF004)	APES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	.000	10.000	SREF 2690.0000 SQ.FT.
(EEF003)	APES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	.000	10.000	LREF 1290.3000 IN.
						BREF 536.6800 IN.
						XREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

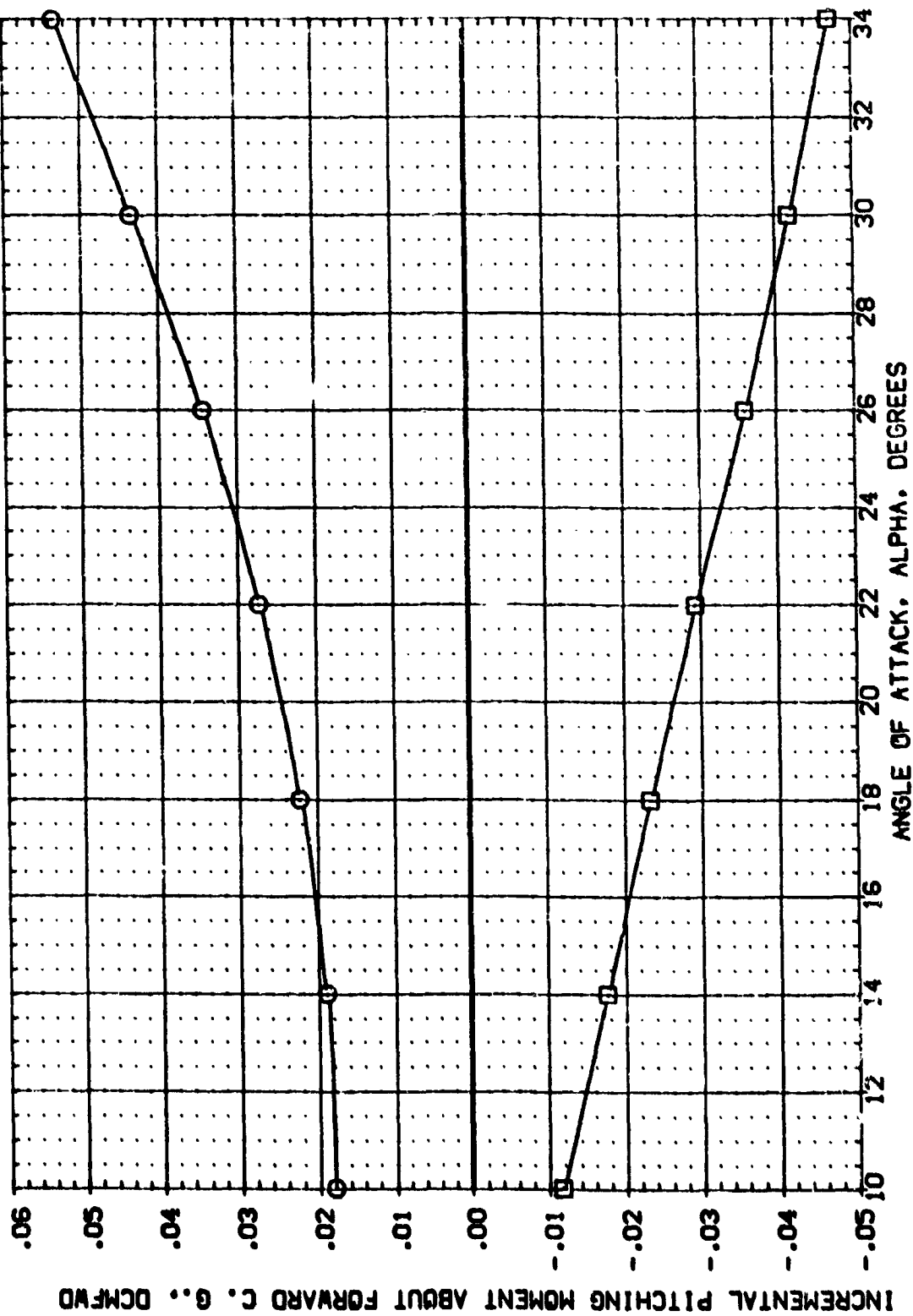


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOON	BOFLAP	RN/L	REFERENCE INFORMATION
(E87004)	AMES 3.5-176 C487 140 A/B ORBITER	-40.000	55.000	.000	10.000	987 2690.0000 IN.
(E87003)	AMES 3.5-176 C487 140 A/B ORBITER	10.000	55.000	.000	10.000	L487 1250.3000 IN.
						B487 936.6800 IN.
						X487 1076.4800 IN.
						Y487 .0000 IN.
						Z487 375.0000 IN.
						SCALE .0150

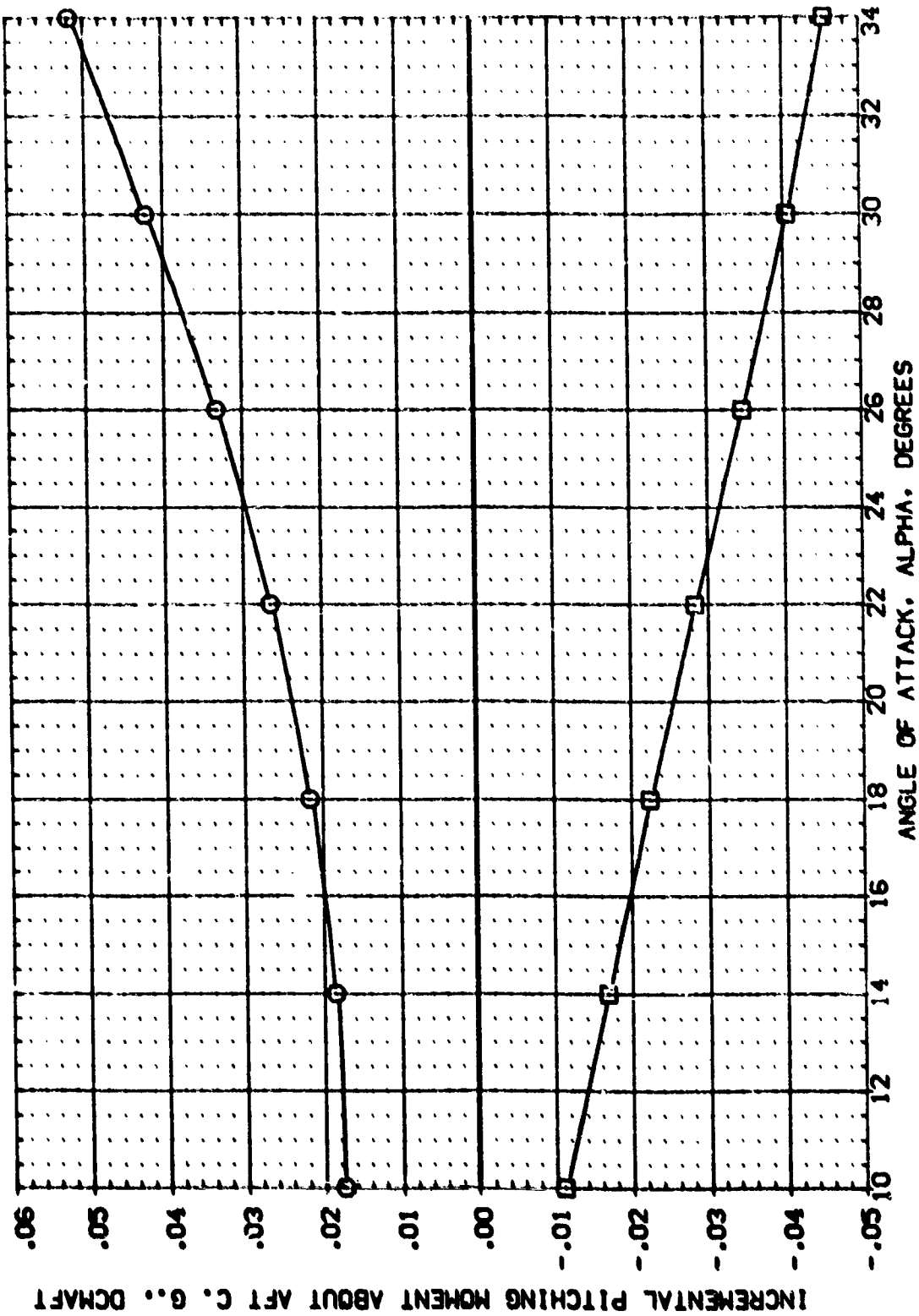


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=0.0

(A)MACH = 7.32

(FEF004)

AMES 3.5-176 0A87 140 A/B ORBITER

SYMBOL	ALPHA	HIGH	PARAMETRIC VALUES	DATA SOURCE	ELEVON	DATA SET	ELEVON	REF	SO. FT.
□	10.000		7.320	BETA	.000	FEF001	.000	SREF	2690.0000
□	20.000		.000	BOFLAP	-40.000	FEF004	.000	LREF	1290.3000
◇	30.000		.000	SPOBRK	10.000	FEF003	.000	XREF	936.6800
			10.000					YREF	1076.4800
								ZREF	375.0000
								SCALE	.0150

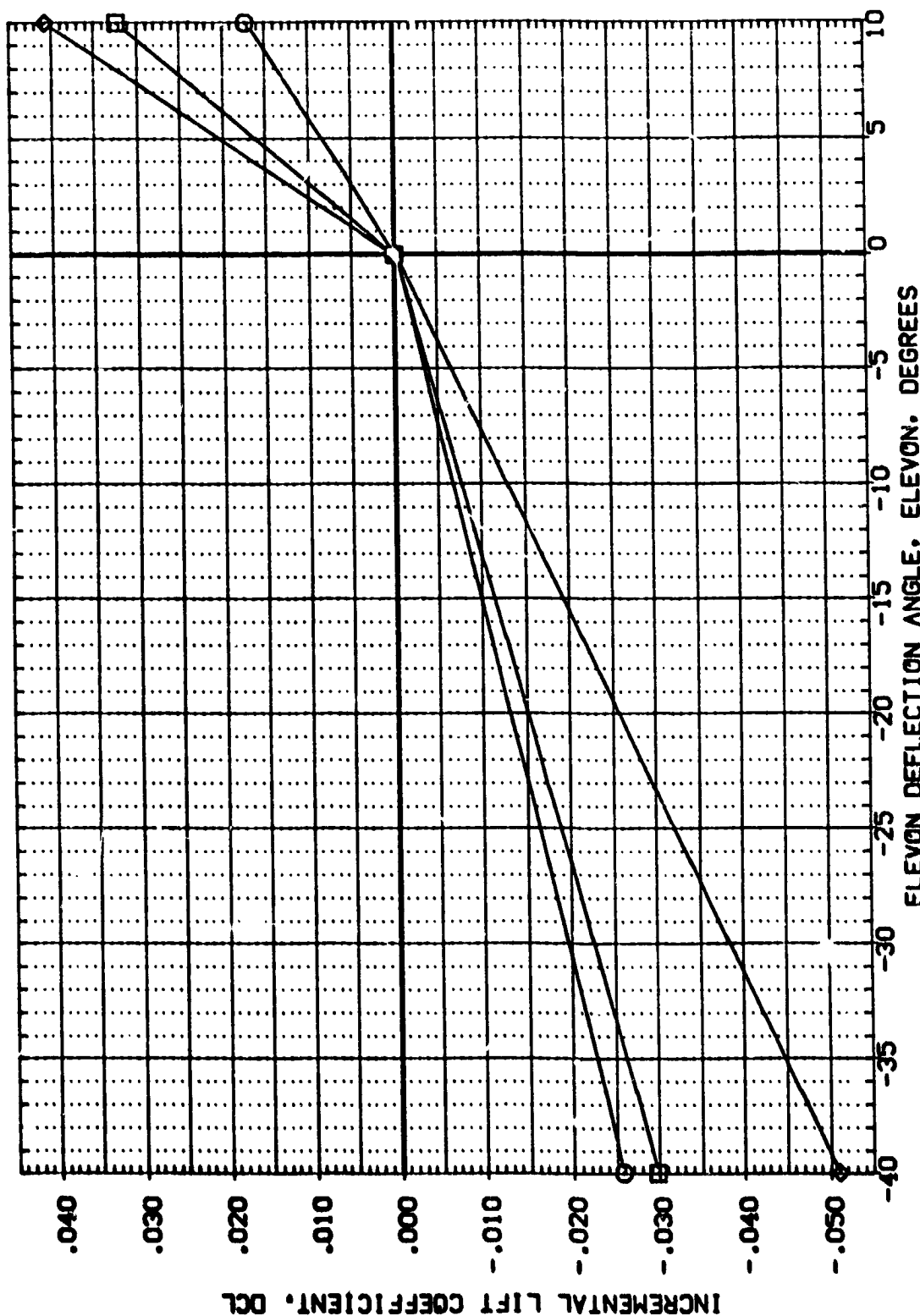


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=0.0

AMES 3.5-176 OA87 140 A/B ORBITER (FEF004)

SYMBOL	PARAMETRIC VALUES				DATA SOURCE		REFERENCE INFORMATION			
	ALPHA	MACH	AILRON	RVL	BETA	BOFLAP	SPDRK	SCALE	YREF	SO.FT.
□	10.000				7.320				2650.0000	IN.
□	20.000				.000				1250.3000	IN.
◇	30.000				.000				936.6800	IN.
					.000				1076.4800	IN.
					10.000				375.0000	IN.
									.0150	SCALE

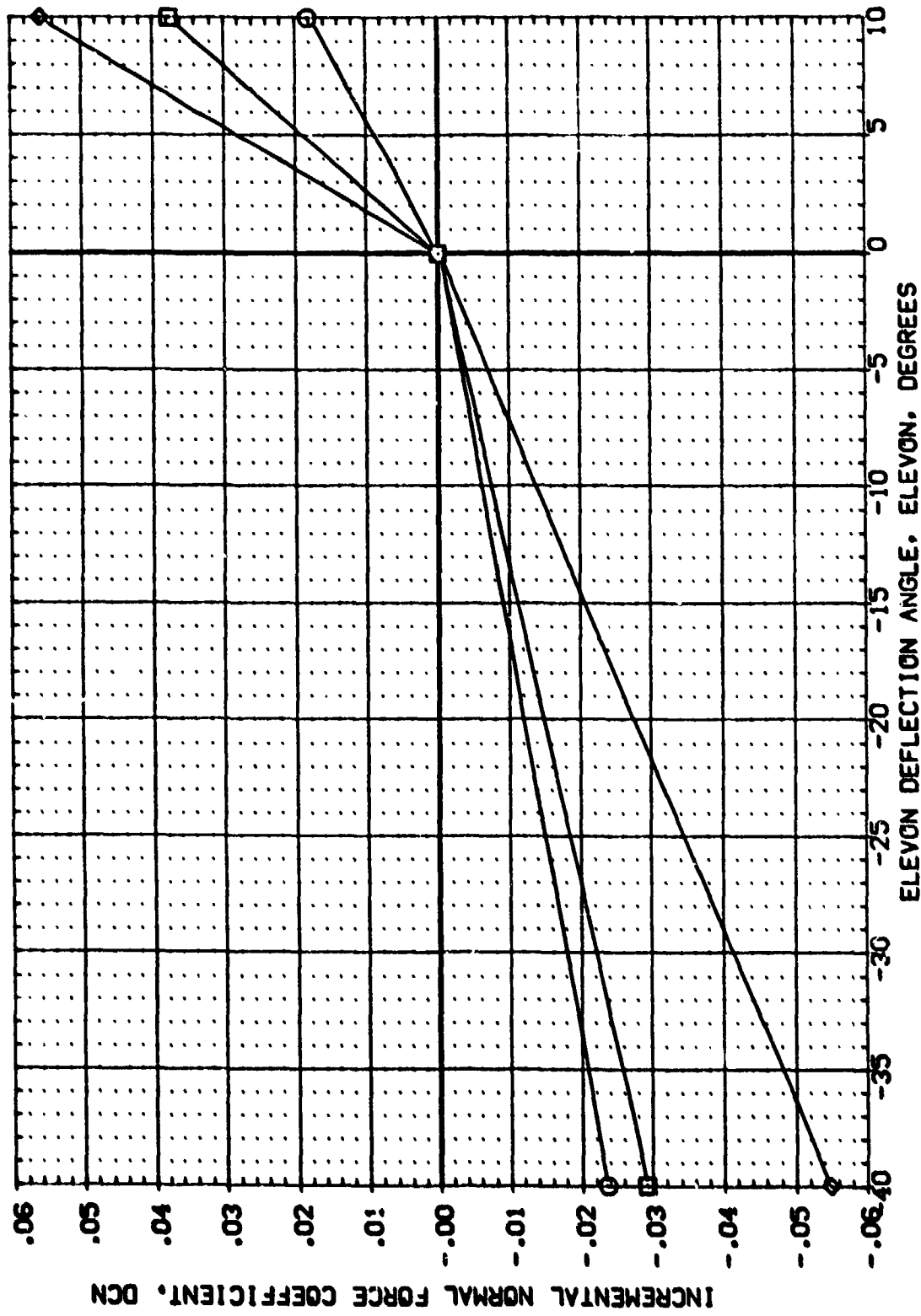


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

AMES 3.5-176 0A87 140 A/B ORBITER (FEF004)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	DATASET	ELEVON	SREF	REFERENCE INFORMATION		
								2890.0000	SO.FT.	
○	10.000	AILON	7.320	BETA	.000	FEF004	REF	1290.3000	IN.	
□	20.000	FLDER	.000	BDFLAP	.000	FEF003	REF	936.6800	IN.	
◇	30.000	RV/L	.000	STDBK	55.000	FEF003	REF	1076.4800	IN.	
			10.000				REF	375.0000	IN.	
							SCALE	.0150	SCALE	

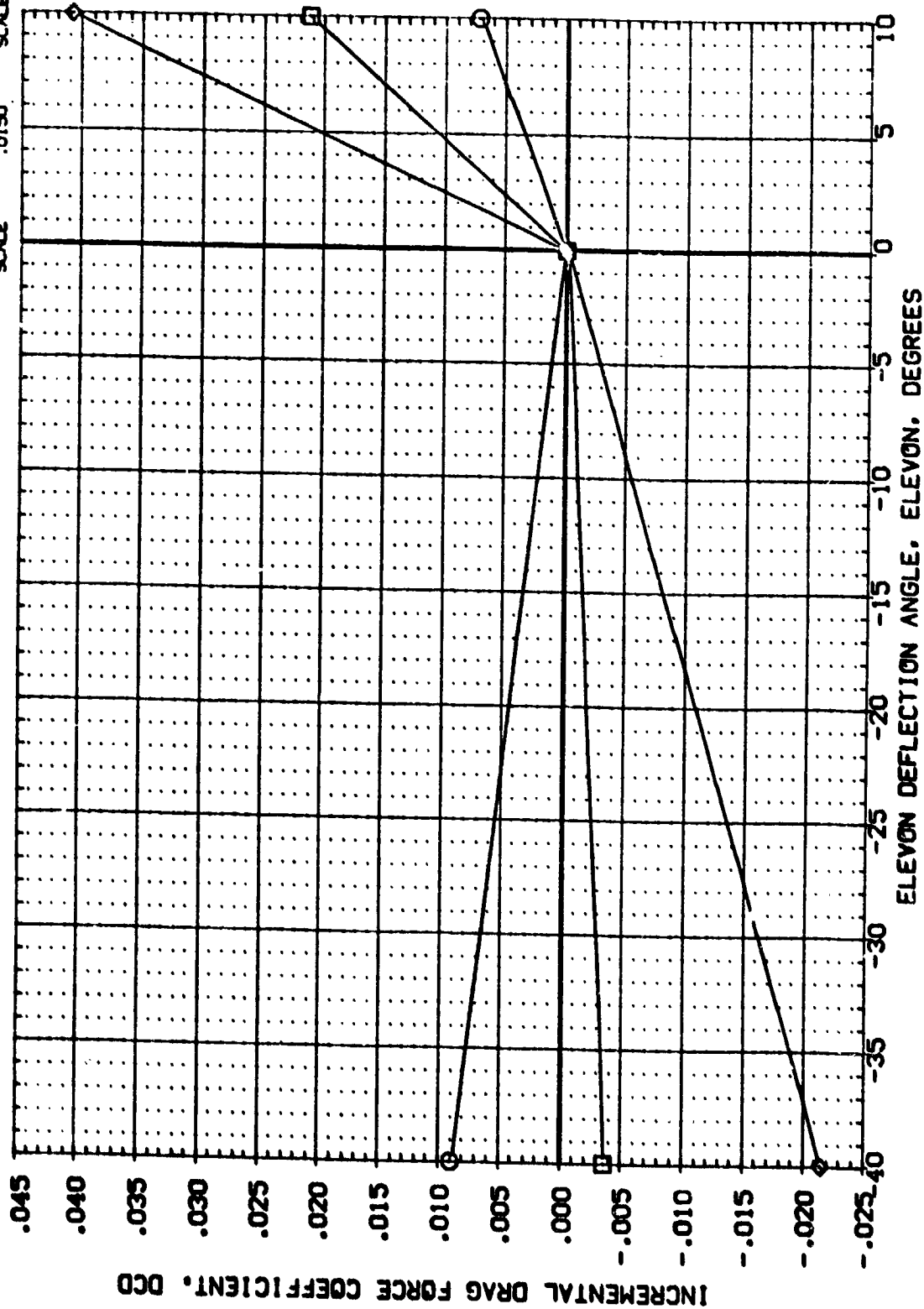


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(FF004)

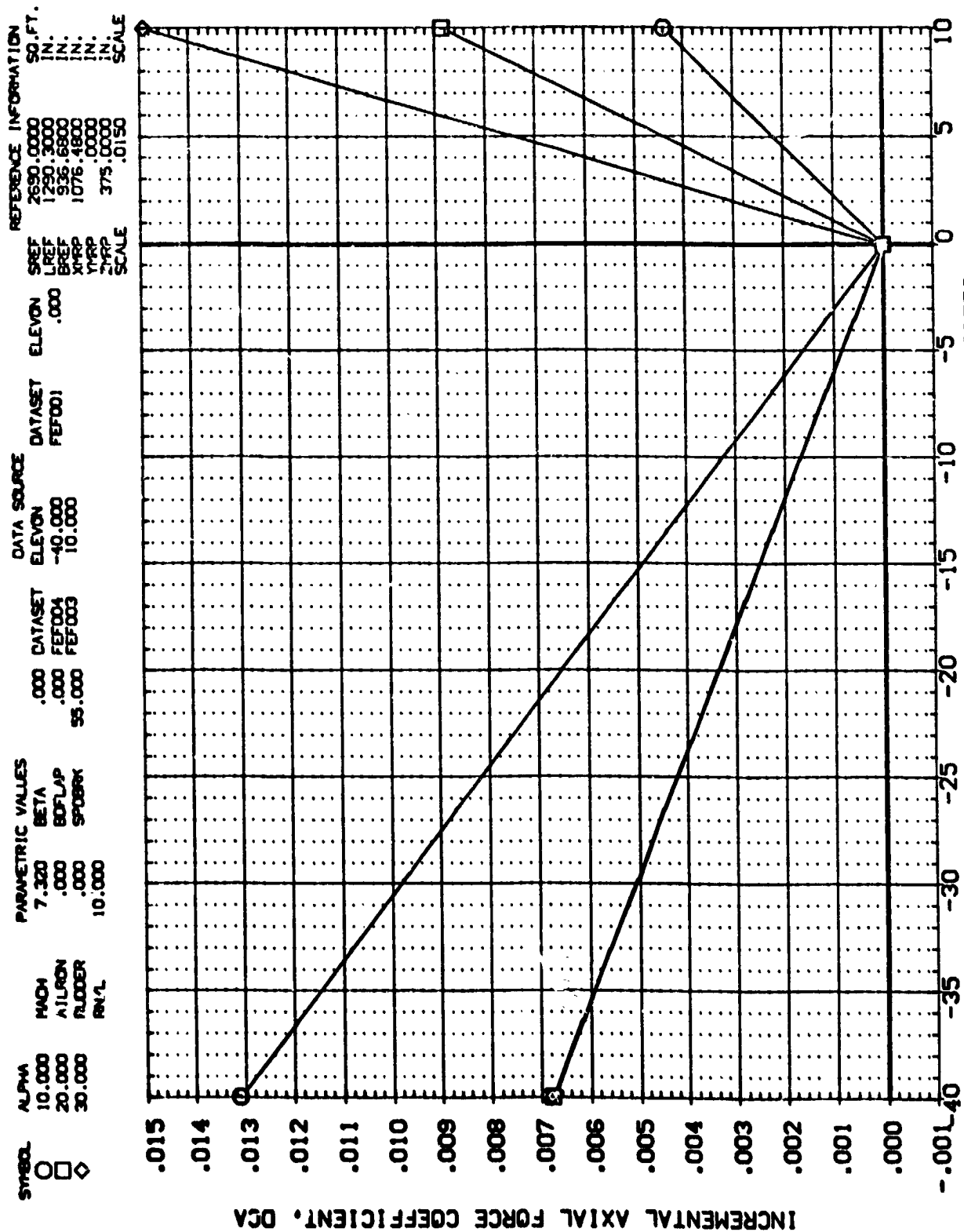


FIG. 4 ELEVON EFFECTIVENESS, $RN/L=10.$, $BDFLAP=C.0$

(FEF004)

AMES 3.5-176 0A37 140 A/B ORBITER

SYMBOL		PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
○ □ ◇	ALPHA	MACH	BETA	.000	ELEVON	SREF	SQ.FT.
	10.000	7.320	BDFLAP	.000	.000	LREF	IN.
	20.000	.000	SPOBRK	.000	FEF004	BREF	IN.
	30.000	.000	RV/L	55.000	FEF003	YREF	IN.
						ZREF	IN.
						SCALE	SCALE
							.0150

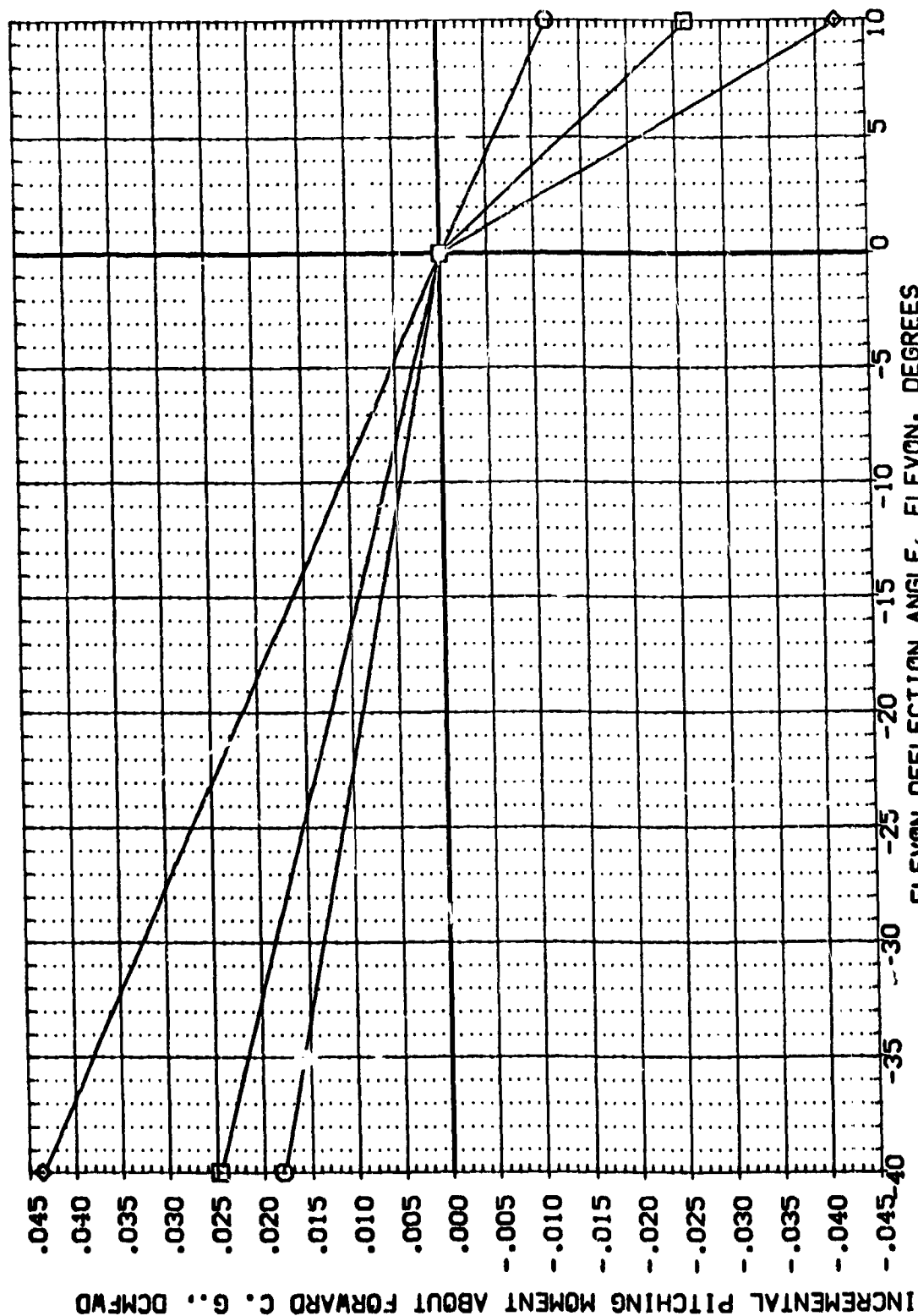


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(FEF004)

SYMBOL	ALPHA	PARAMETRIC VALUES				DATA SOURCE		REFERENCE INFORMATION			
		MACH	BETA	DATASET	ELEVON	DATASET	ELEVON	SREF	SO.FT.		
○	10.000		7.320	.000	-40.000	FEF001	.000	LREF	1230.0000		
□	20.000	ALURON	.000	.000	10.000	FEF004	.000	BREF	936.5800		
◇	30.000	RUDER	.000	55.000		FEF003	.000	XMRP	1076.4800		
		RVL	10.000				.000	YMRP			
							.000	ZMRP			
							.0150	SCALE			

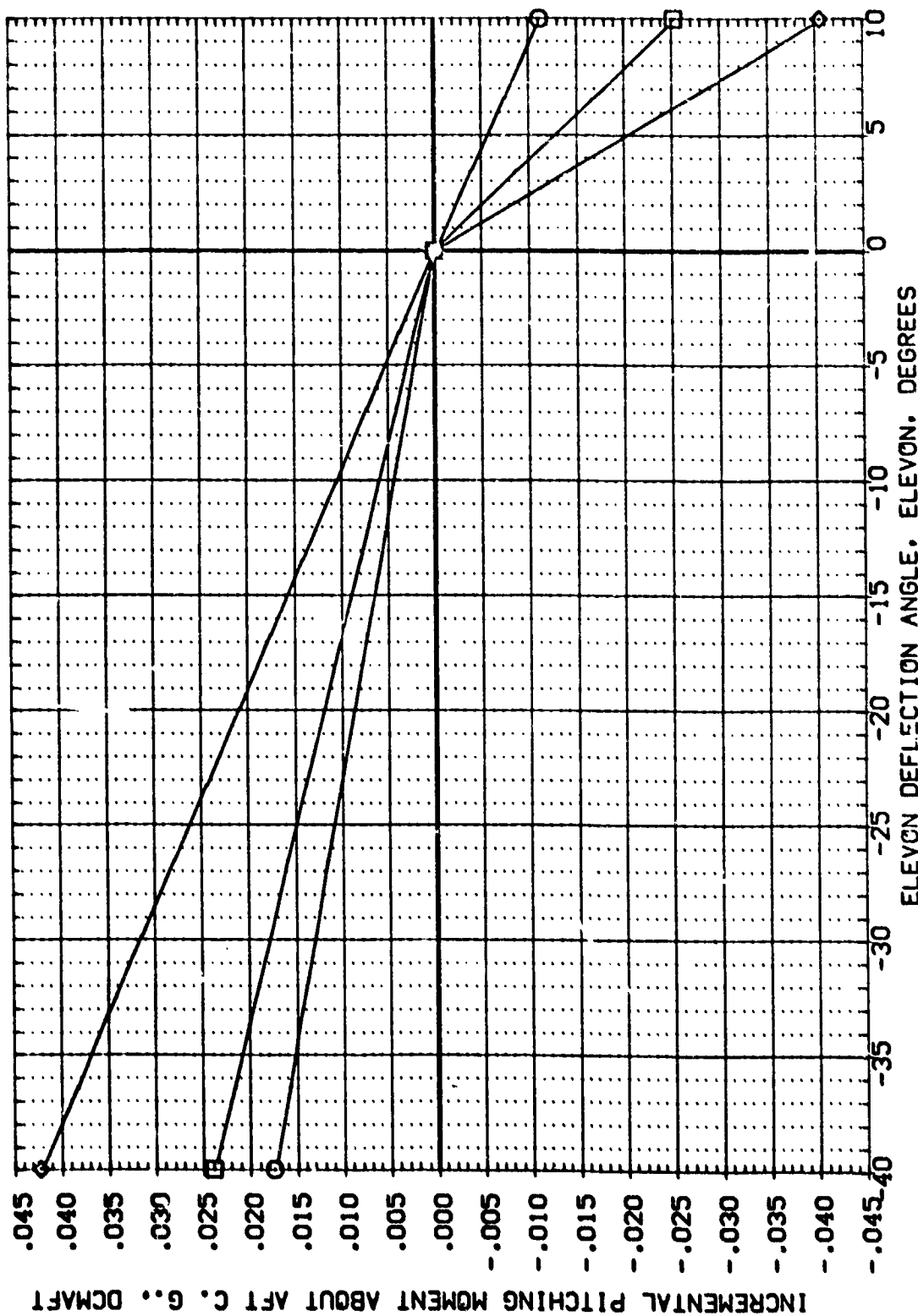


FIG. 4 ELEVON EFFECTIVENESS, $RN/L=10.$, $BDFLAP=0.0$

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO14)	□	AVES 3.5-176 OAB7 140 A/B OBB1TER	-40.000	55.000	16.300	10.000	SREF 2650.0000 SO.FT.
(BEFO15)	□	AVES 3.5-176 OAB7 140 A/B OBB1TER	0.000	55.000	16.300	10.000	LREF 1290.3000 IN.
(BEFO12)	□	AVES 3.5-176 OAB7 140 A/B OBB1TER	10.000	55.000	16.300	10.000	BREF 936.6800 IN.
(BEFO13)	□	AVES 3.5-176 OAB7 140 A/B OBB1TER	15.000	55.000	16.300	10.000	XREF 1076.4800 IN.
							YREF 375.0000 IN.
							ZREF .0150 IN.
							SCALE

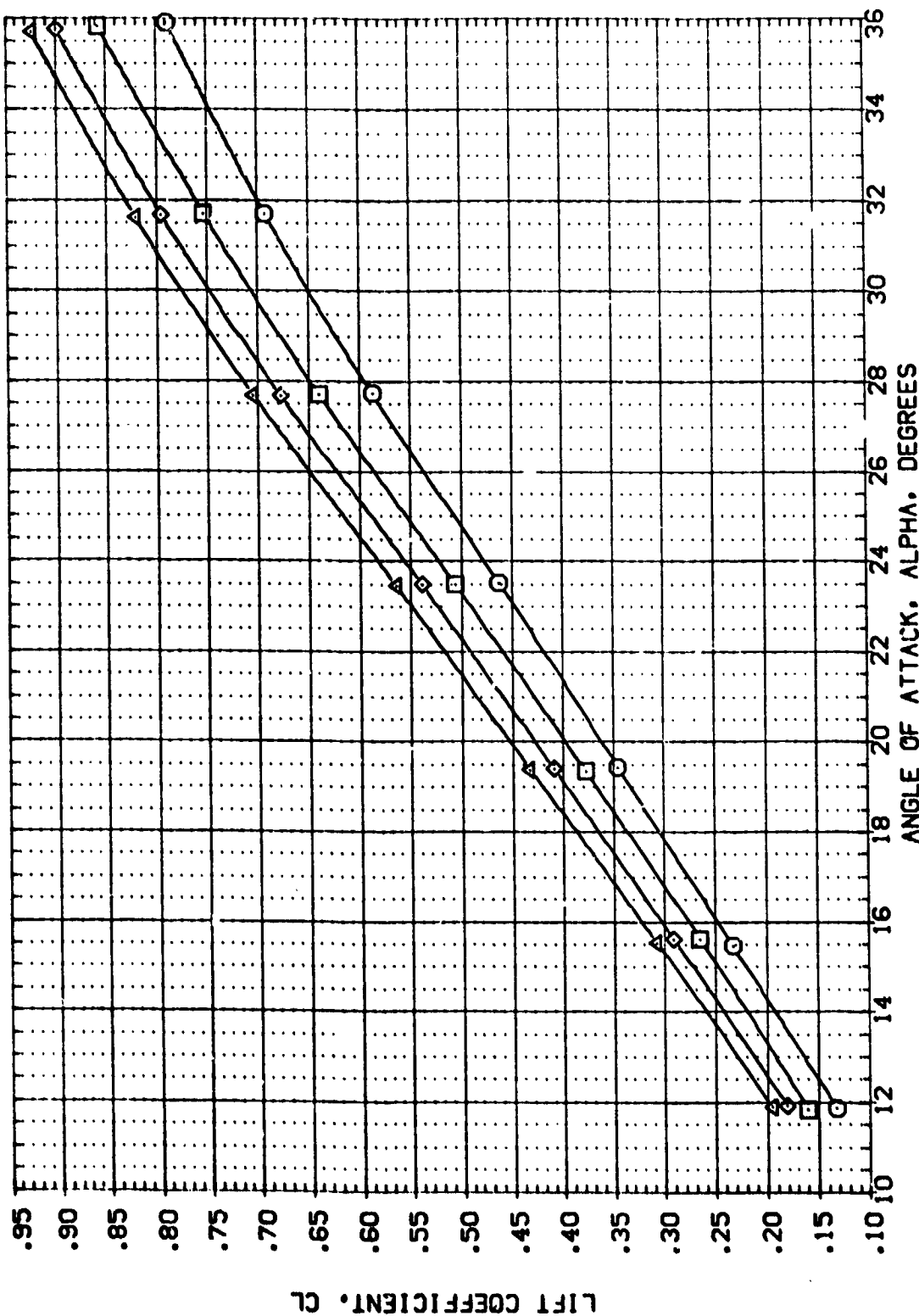


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORAK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO14)	AVES 3.5-176 OAG7 140 A/B OGB1TER	-40.000	55.000	16.300	10.000	SREF 2690.0000 SQ.FT.
(BEFO15)	AVES 3.5-176 OAG7 140 A/B OGB1TER	0.000	55.000	16.300	10.000	LREF 1290.3000 IN.
(BEFO12)	AVES 3.5-176 OAG7 140 A/B OGB1TER	10.000	55.000	16.300	10.000	EPREF 936.6800 IN.
(BEFO13)	AVES 3.5-176 OAG7 140 A/B OGB1TER	15.000	55.000	16.300	10.000	XREF 1076.4500 IN.
						YREF 0.000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

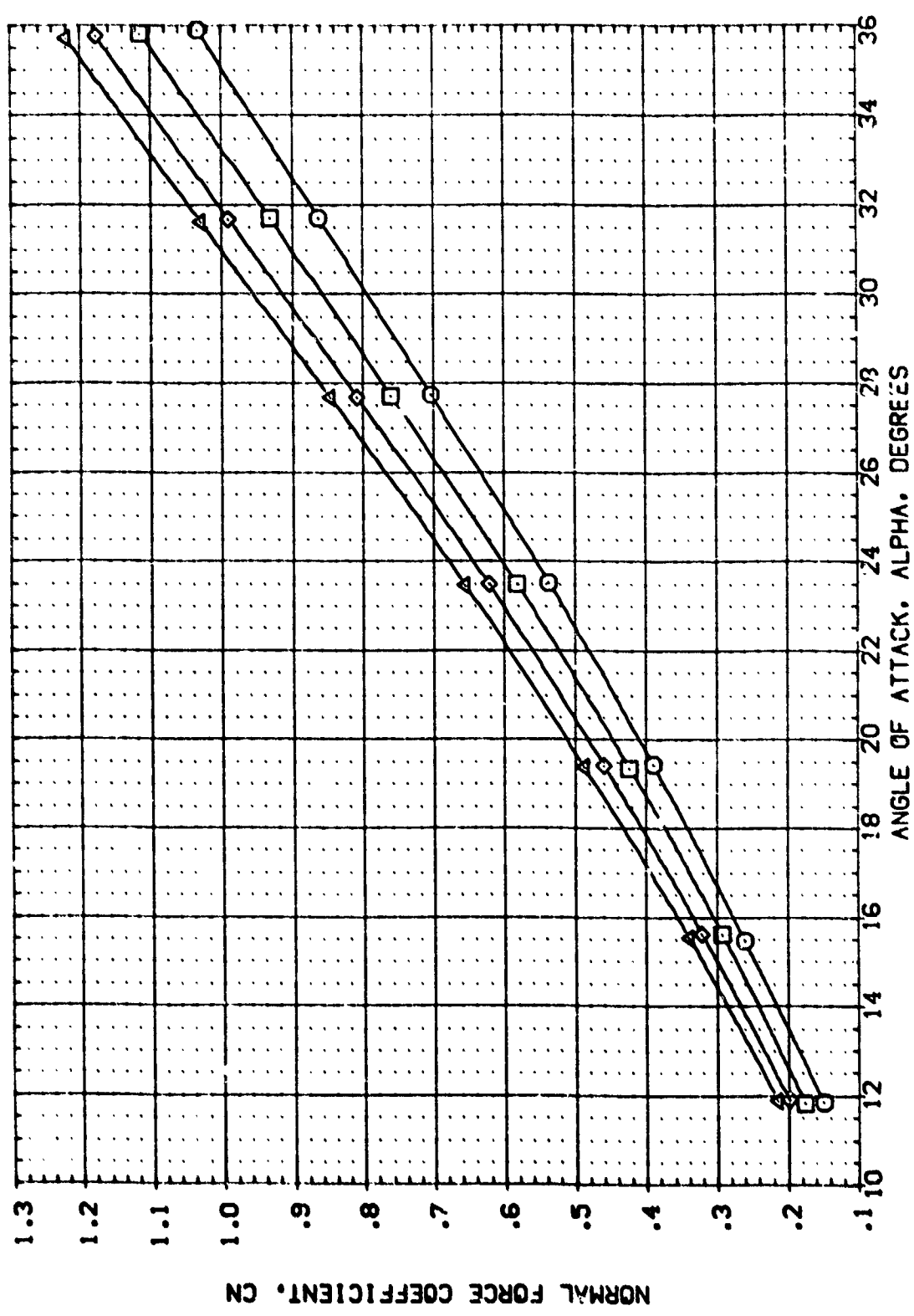


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO14)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	16.300	10.000	SREF 2690.0000 SQ.FT.
(BEFO15)	AVES 3.5-176 OAB7 140 A/B ORBITER	0.000	55.000	16.300	10.000	LREF 1290.3000 IN.
(BEFO12)	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	16.300	10.000	BREF 936.6600 IN.
(BEFO13)	AVES 3.5-176 OAB7 140 A/B ORBITER	15.000	55.000	16.300	10.000	XPRP 1076.4800 IN.
						YPRP 0.0000 IN.
						ZPRP 375.0000 IN.
						SCALE .0150 SCALE

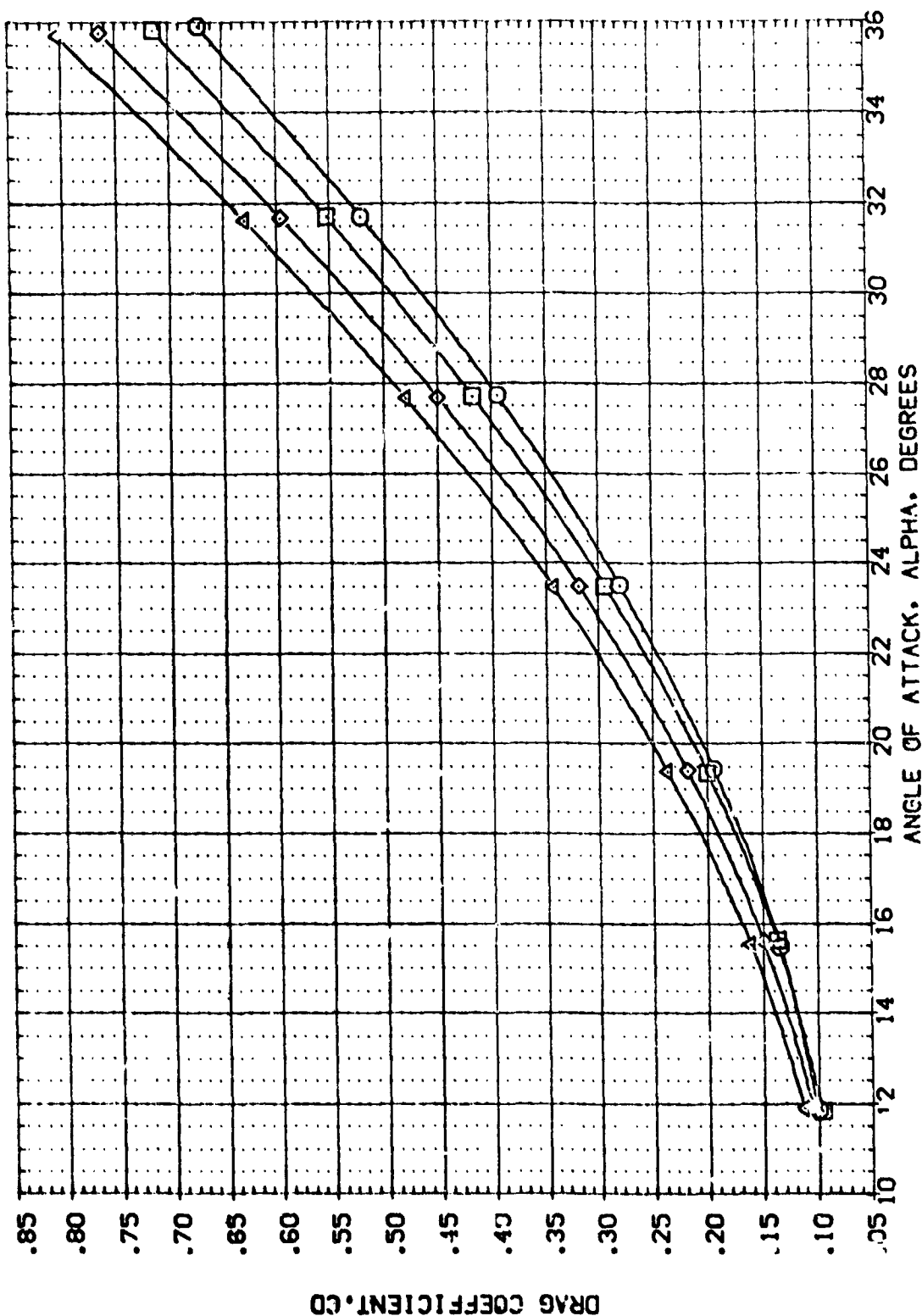


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SWOBW	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFO14)	AVES 3.5-176 OAB7 140 A/B ORBITER	-10.000	55.000	16.300	10.000	SREF 7690.0000 SQ.FT.
(BEFO15)	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	16.300	10.000	L.F 1290.3000 IN.
(BEFO12)	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	16.300	10.000	BREF 936.6800 IN.
(BEFO13)	AVES 3.5-176 OAB7 140 A/B ORBITER	15.000	55.000	16.300	10.000	YREF 1076.4800 IN.
						ZREF 375.0000 IN.
						SCALE .0150

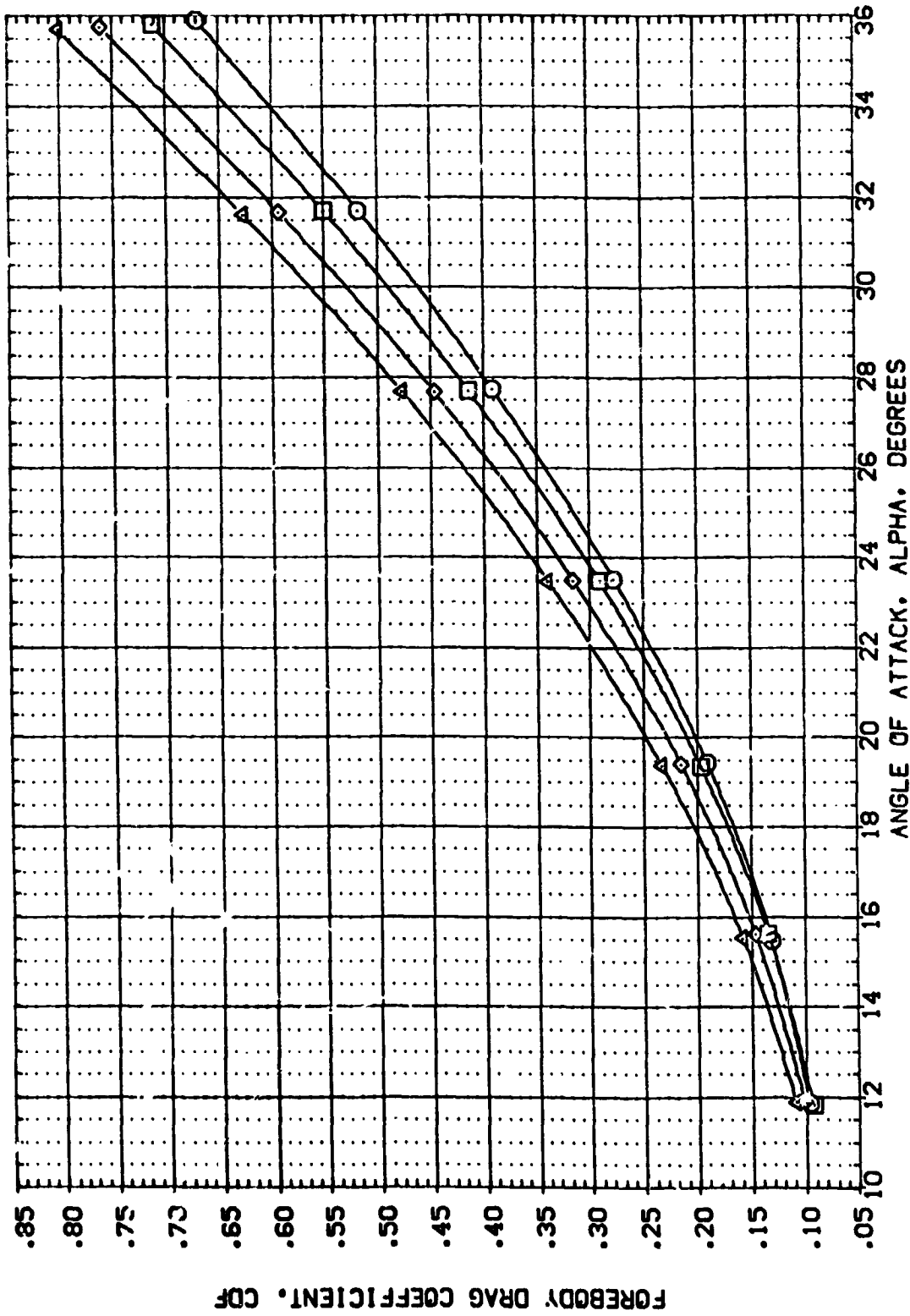


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORBK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFO14)	AMES 3.5-176 DAB7 140 A/B OGB/TER	-40.000	55.000	16.300	10.000	SREF 2630.0000 SQ.FT.
(BEFO13)	AMES 3.5-176 DAB7 140 A/B OGB/TER	10.000	55.000	16.300	10.000	UREF 1230.3100 IN.
(BEFO12)	AMES 3.5-176 DAB7 140 A/B OGB/TER	15.000	55.000	16.300	10.000	BREF 936.6800 IN.
						XREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

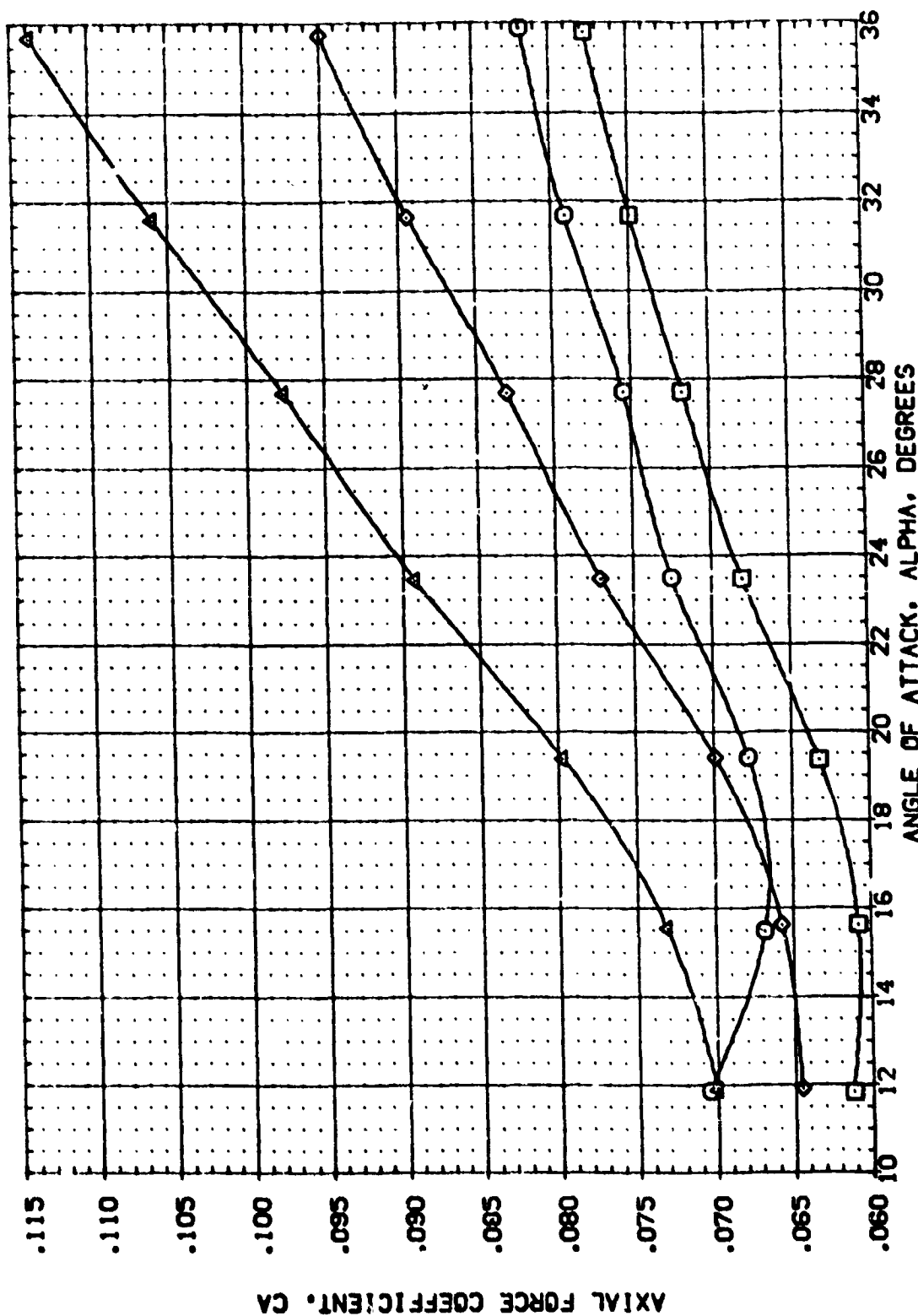


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF01.4)	AVES 3.5-176 DAB7 140 A/B DBRITER	-40	25.000	16.300	10.000	SREF 2650.0000 50. FT.
(BEF01.5)	AVES 3.5-176 DAB7 140 A/B DBRITER	0	25.000	16.300	10.000	LREF 1250.3000 IN.
(BEF01.2)	AVES 3.5-176 DAB7 140 A/B DBRITER	10.000	25.000	16.300	10.000	BREF 936.6800 IN.
(BEF01.3)	AVES 3.5-176 DAB7 140 A/B DBRITER	15.000	25.000	16.300	10.000	XREF 1076.4800 IN.
						YREF 375.0000 IN.
						ZREF 0.0150 IN.
						SCALE

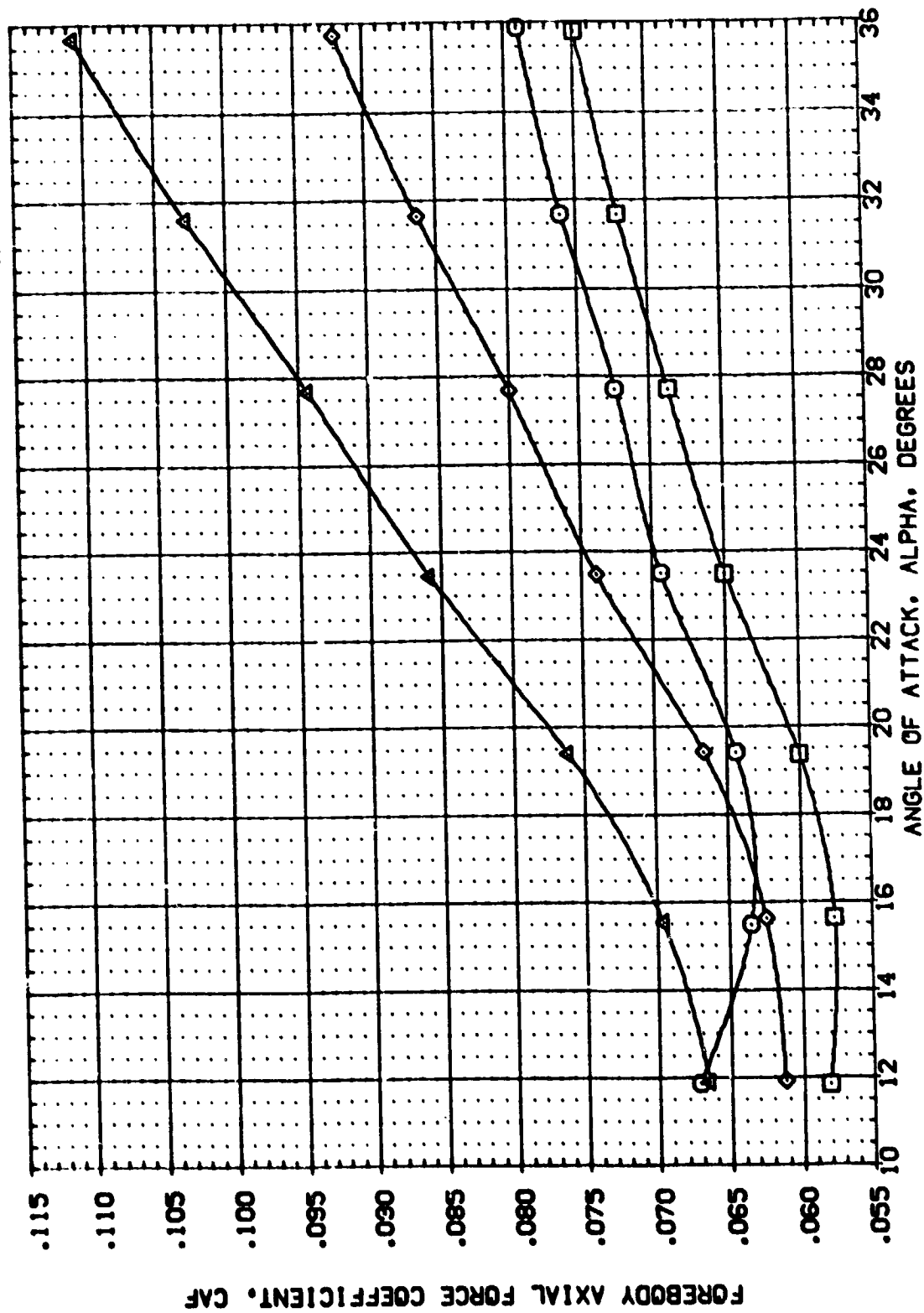


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO14)	AVES 3.5-176 DAG7 140 A/B ORBITER	-40.000	55.000	16.300	10.000	SREF 2690.0000 SQ.FT.
(BEFO15)	AVES 3.5-176 DAG7 140 A/B ORBITER	.000	55.000	16.300	10.000	LREF 1290.3000 IN.
(BEFO12)	AVES 3.5-176 DAG7 140 A/B ORBITER	10.000	55.000	16.300	10.000	BREF 936.6800 IN.
(BEFO13)	AVES 3.5-176 DAG7 140 A/B ORBITER	15.000	55.000	16.300	10.000	YREF 1076.4800 IN.
						ZREF .0000 IN.
						SCALE .0150

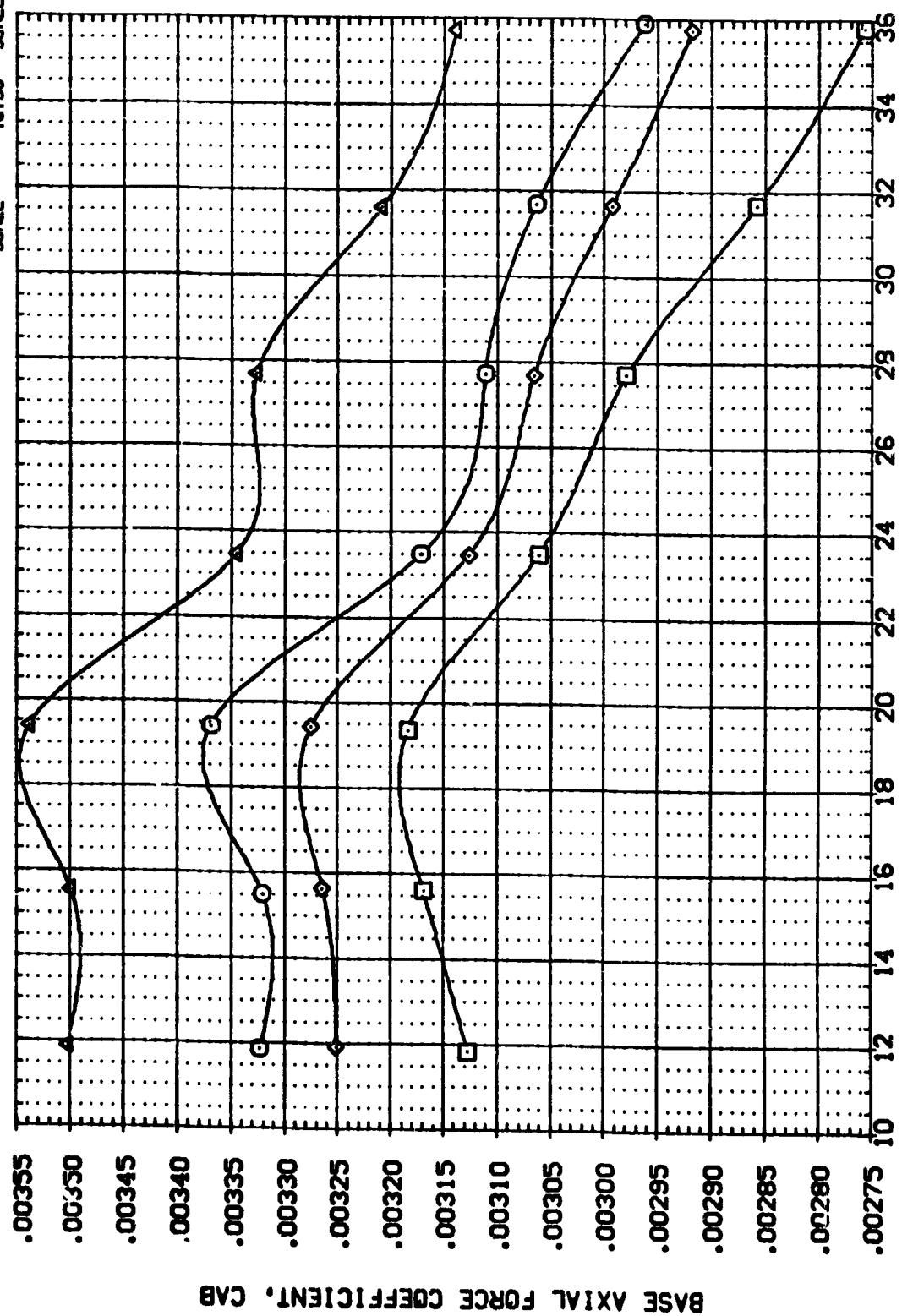


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBY	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF014)	AVES 3.5-176 DAB7 140 A/B DRB TER	-40.000	55.000	16.300	10.000	SREF 2690.0000 SQ. FT.
(CSF015)	AVES 3.5-176 DAB7 140 A/B DRB TER	10.000	55.000	16.300	10.000	LREF 1290.3000 IN.
(BEF012)	AVES 3.5-176 DAB7 140 A/B DRB TER	15.000	55.000	16.300	10.000	BRF 936.6800 IN.
(BEF013)	AVES 3.5-176 DAB7 140 A/B DRB TER					YMRP 1076.4800 IN.
						ZMRP .0000 IN.
						SCALE .0150

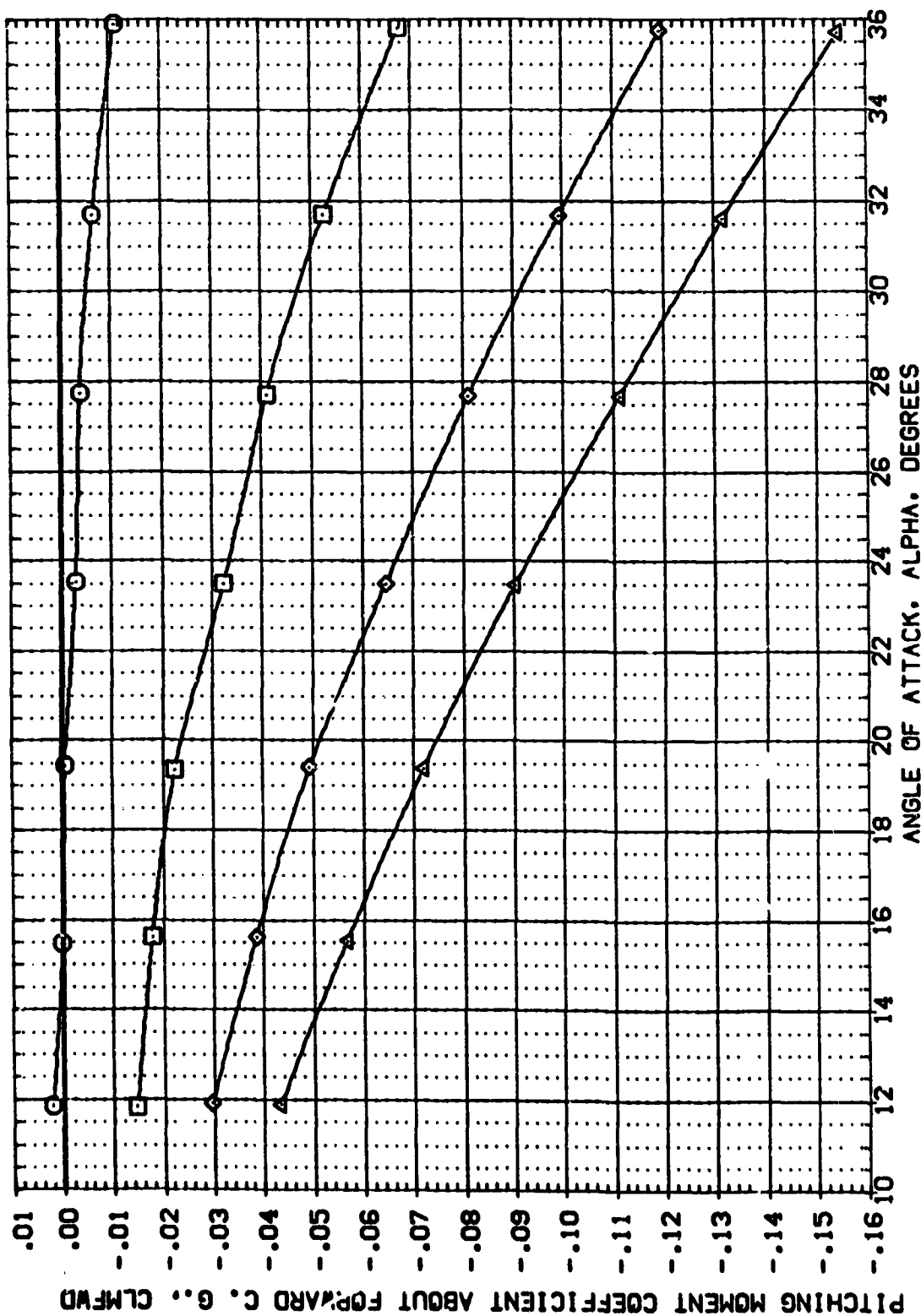


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOON	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF014)	AVES 3.5-176 DAB7 140 A/B DRBITER	-40.000	55.000	16.300	10.000	SREF 2687.0000 SQ.FT.
(BEF015)	AVES 3.5-176 DAB7 140 A/B DRBITER	17.000	55.000	16.300	10.000	LREF 1290.3000 IN.
(BEF012)	AVES 3.5-176 DAB7 140 A/B DRBITER	15.000	55.000	16.300	10.000	SREF 936.5800 IN.
(BEF013)	AVES 3.5-176 DAB7 140 A/B DRBITER			16.300	10.000	XPRP 1076.1800 IN.
						YPRP 375.0000 IN.
						ZPRP 0.0150 IN.
						SCALE

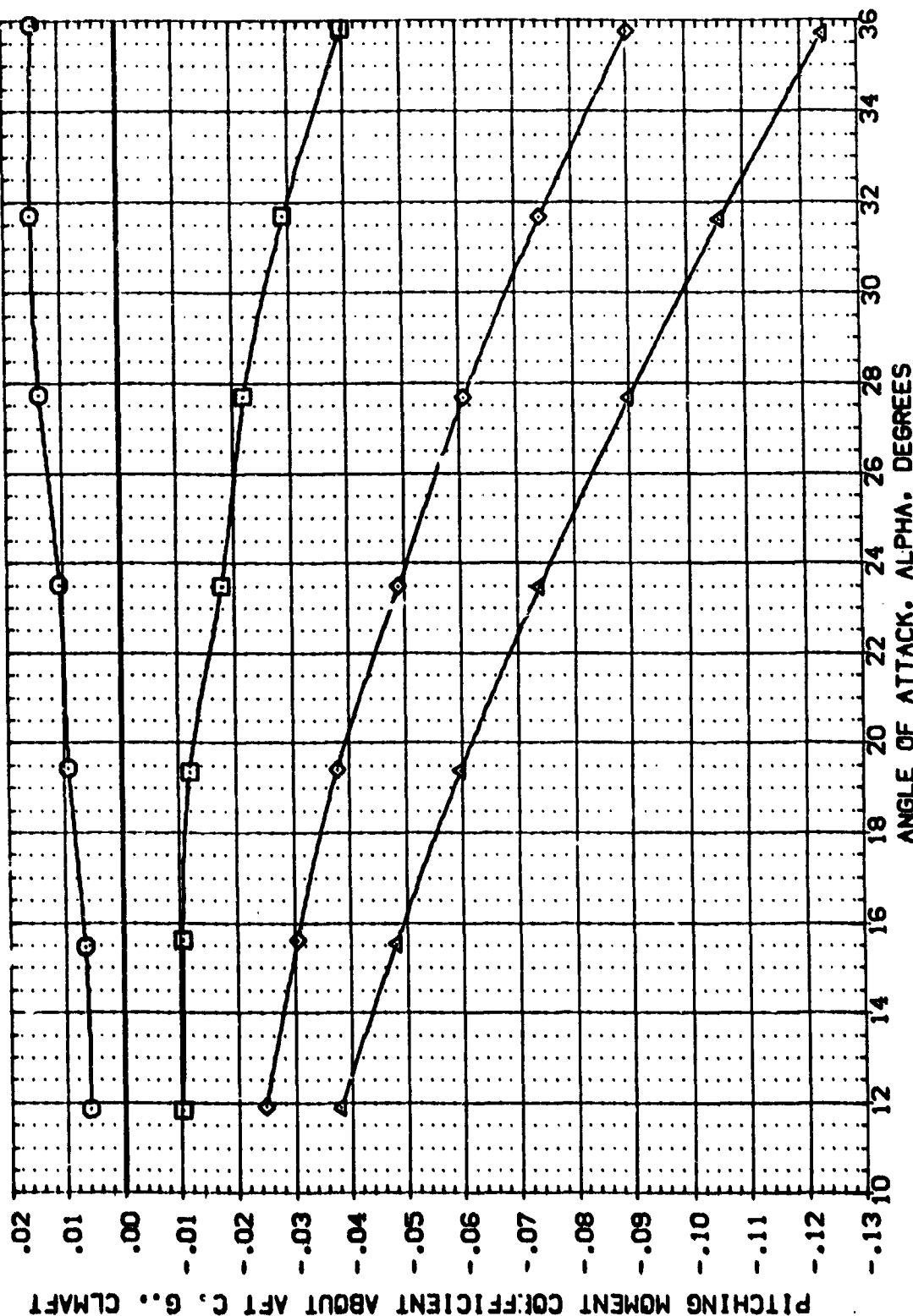


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORCK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO14)	WES 3.5-176 OAB7 140 A/B OAB11E)	-40.000	55.000	15.300	10.000	SREF 2650.0000 SO.FT.
(BEFO15)	WES 3.5-176 OAB7 140 A/B OAB11E)	.000	55.000	16.300	10.000	LREF 1250.3000 IN.
(BEFO12)	WES 3.5-176 OAB7 140 A/B OAB11E)	19.000	55.000	16.300	10.000	BREF 936.6800 IN.
(BEFO13)	WES 3.5-176 OAB7 140 A/B OAB11E)	19.000	55.000	16.300	10.000	XREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

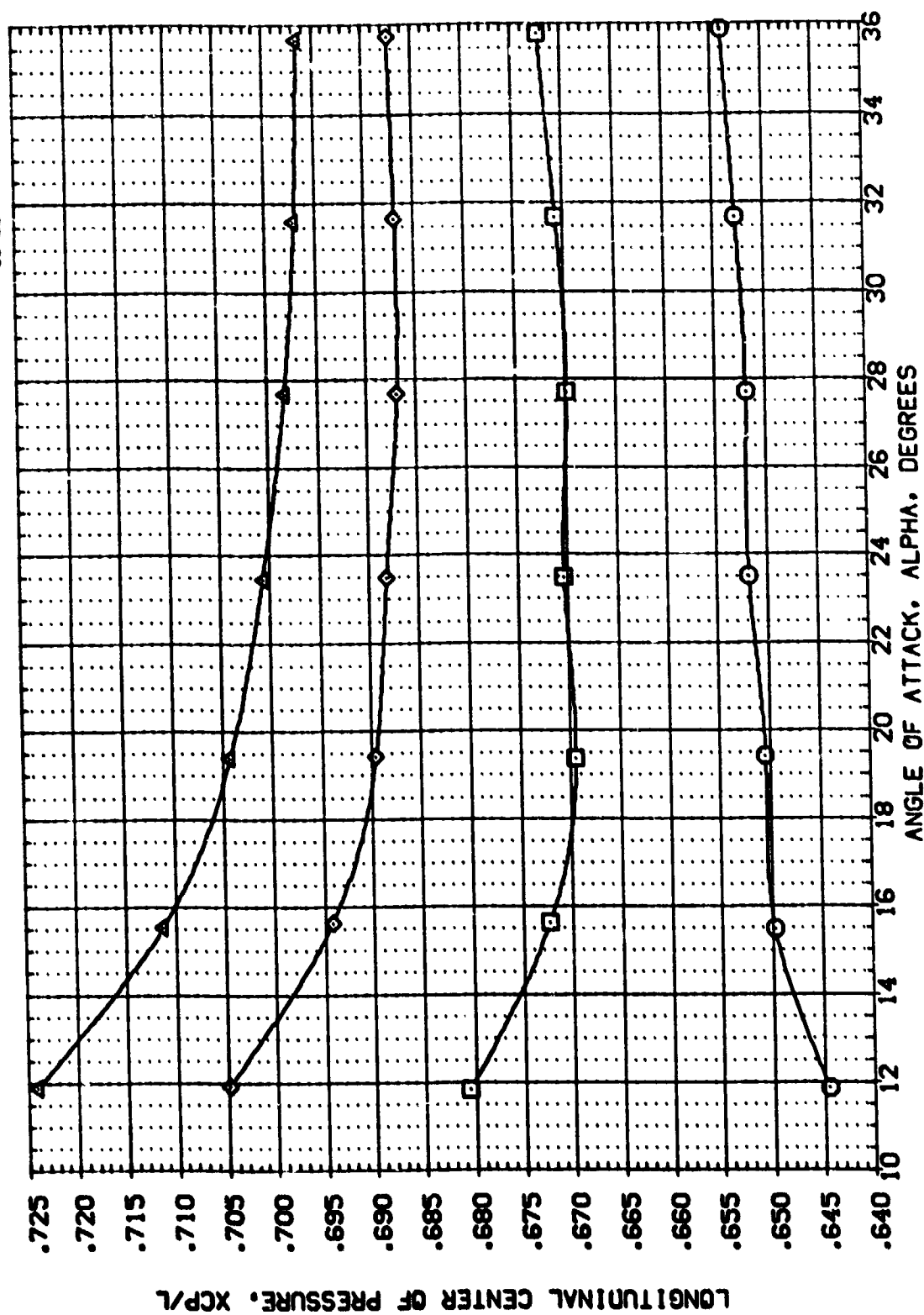


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORCK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO14)	□	WES 3.5-176 DAB7 140 A/B CRBITER	-40.000	95.000	16.300	10.000	SREF 2650.0000 SO.FT.
(BEFO15)	□	WES 3.5-176 DAB7 140 A/B CRBITER	10.000	95.000	16.300	10.000	UREF 1250.3000 IN.
(BEFO12)	□	WES 3.5-176 DAB7 140 A/B CRBITER	10.000	95.000	16.300	10.000	UREF 936.6800 IN.
(BEFO13)	□	WES 3.5-176 DAB7 140 A/B CRBITER	15.000	95.000	16.300	10.000	UREF 1076.4800 IN.
							YREF 375.0000 IN.
							ZREF .0150 IN.
							SCALE

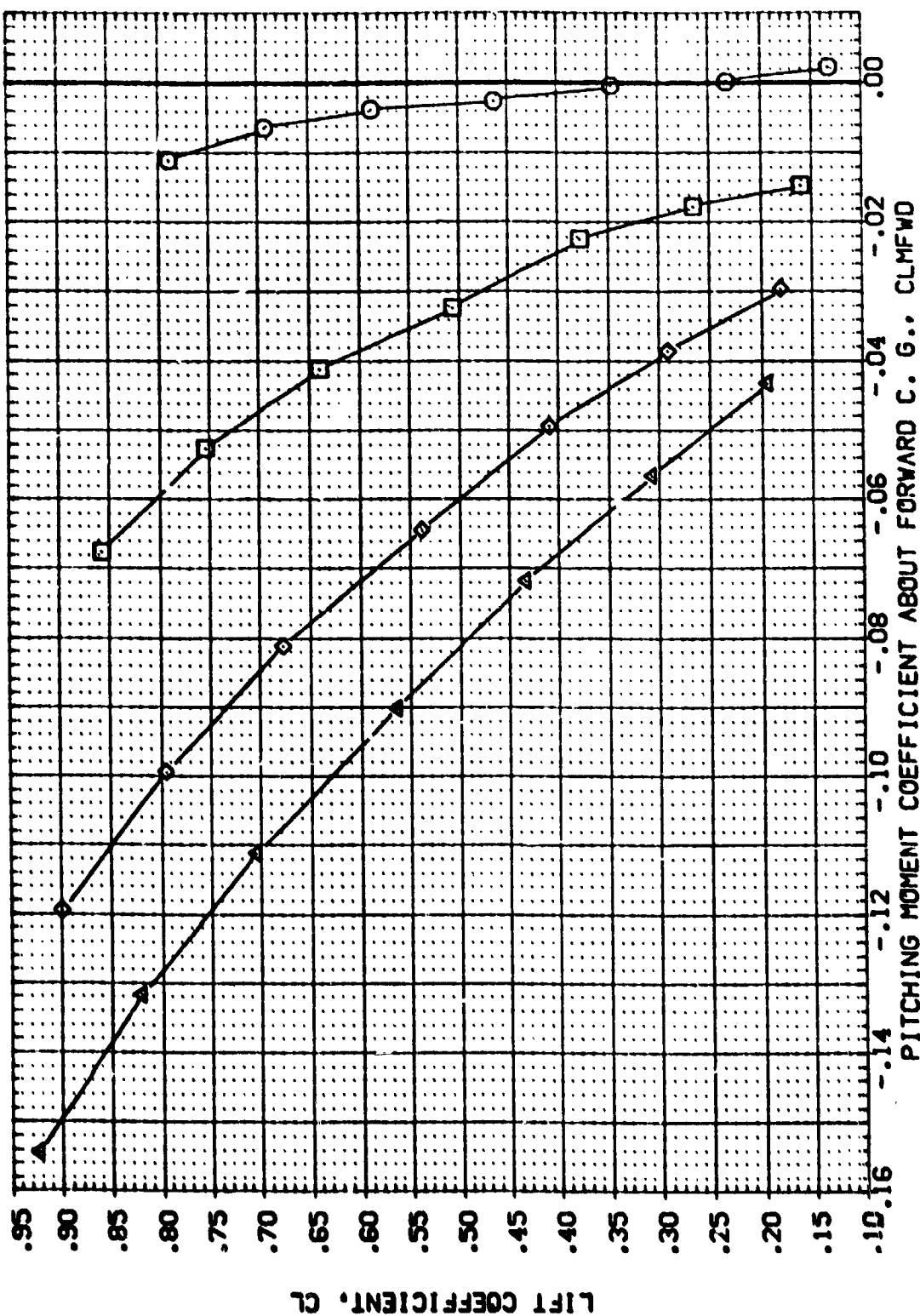


FIG. 5 ELEVON EFFECTIVENESS, $RN/L=10.$, $BDFLAP=16.3$

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF014)	WES 3.5-176 0487 140 A/B ORBITER	-40.000	25.000	16.300	10.000	SNCF 2680 0000 50. FT.
(BEF015)	WES 3.5-176 0487 140 A/B ORBITER	0.000	25.000	16.300	10.000	LNCF 1752 3000 IN.
(BEF012)	WES 3.5-176 0487 140 A/B ORBITER	10.000	25.000	16.300	10.000	BNCF 937 6800 IN.
(BEF013)	WES 3.5-176 0487 140 A/B ORBITER	15.000	25.000	16.300	10.000	BNCF 1076 4800 IN.
						YPRP 375 0000 IN.
						ZPRP 375 0000 IN.
						SCALE .0132

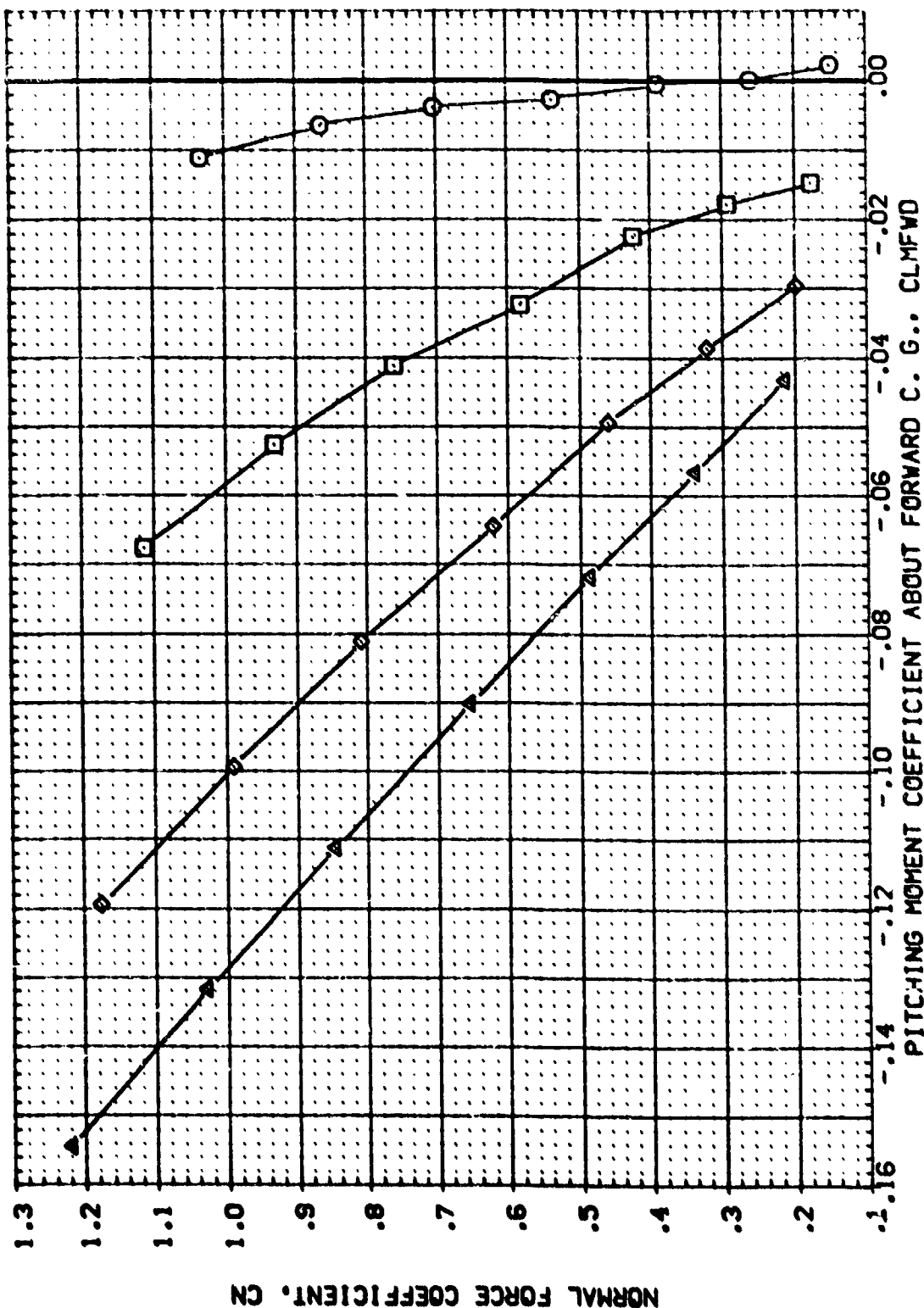


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO14)	AMES 3.5-176 DAB7 140 A/B CRBITER	-40.000	55.000	16.300	10.000	SREF 2690.0000 SQ.FT.
(BEFO13)	AMES 3.5-176 DAB7 140 A/B CRBITER	0.000	55.000	16.300	10.000	UREF 1290.3000 IN.
(BEFO12)	AMES 3.5-176 DAB7 140 A/B CRBITER	10.000	55.000	16.300	10.000	BREF 936.6200 IN.
(BEFO13)	AMES 3.5-176 DAB7 140 A/B CRBITER	15.000	55.000	16.300	10.000	XTRP 1076.4800 IN.
						YTRP 375.0000 IN.
						SCALE .0150

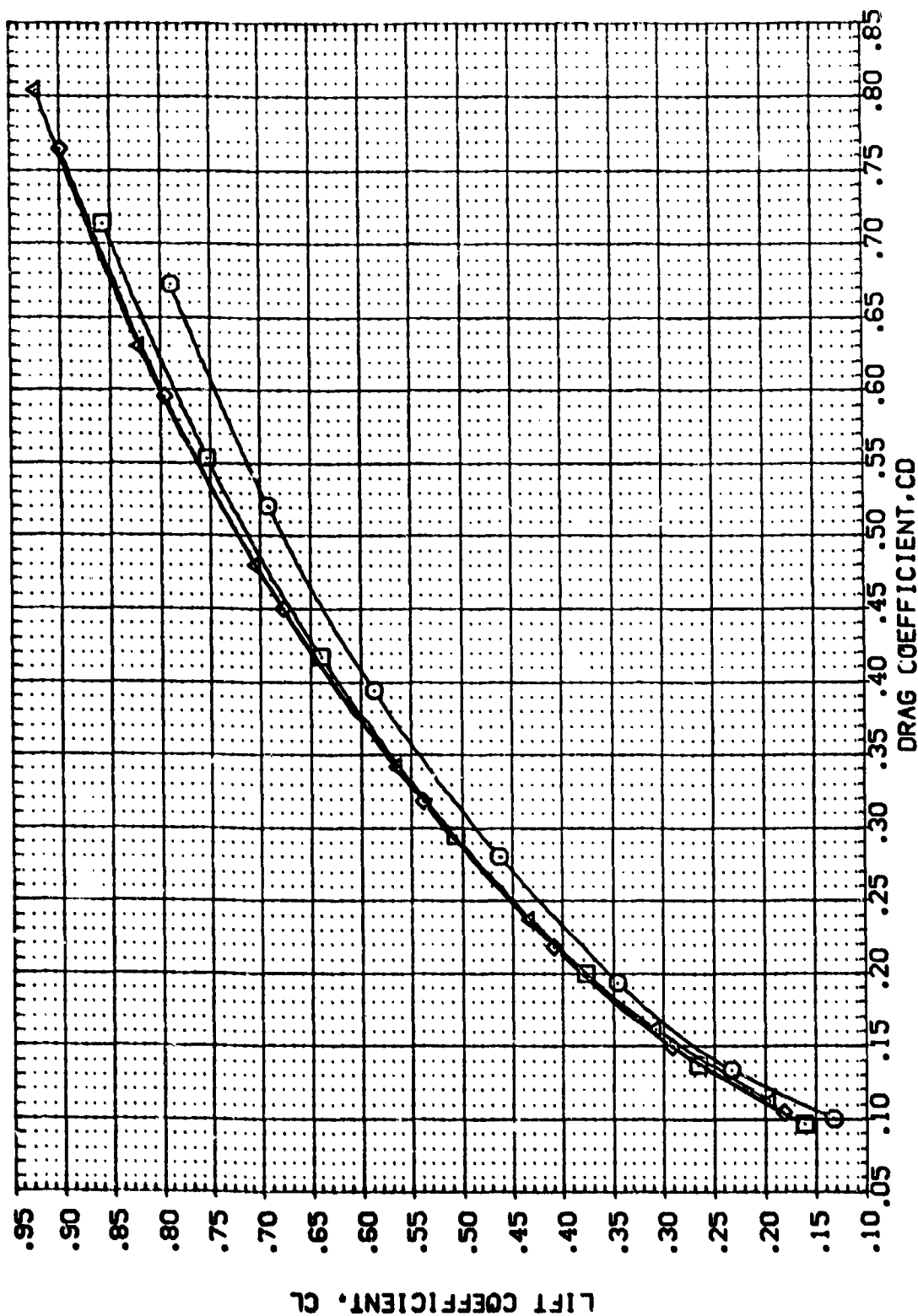


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(AEFO14)	AMES 3.5-176 0A87 140 A/B CR81TER	-40.000	55.000	16.300	10.000	SREF 2690.0000 SQ.FT.
(AEFO15)	AMES 3.5-176 0A87 140 A/B CR81TER	10.000	55.000	16.300	10.000	LREF 1290.3000 IN.
(AEFO12)	AMES 3.5-176 0A87 140 A/B CR81TER	10.000	55.000	16.300	10.000	BREF 936.6800 IN.
(AEFO13)	AMES 3.5-176 0A87 140 A/B CR81TER	15.000	55.000	16.300	10.000	XTREF 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

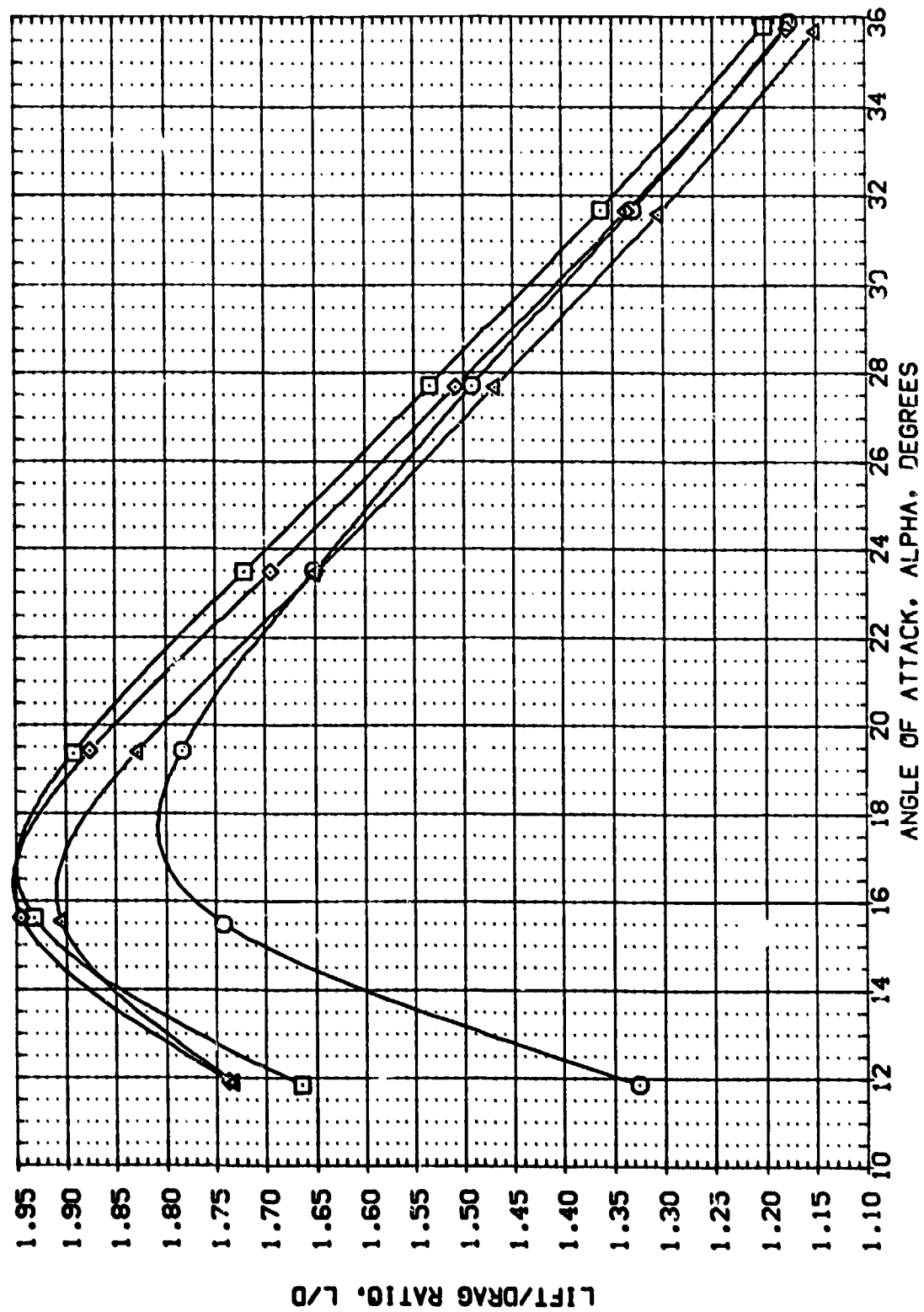


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EEFO14)	AVES 3.5-176 OAG7 140 A/B ORBITER	-40.000	55.000	16.300	10.000	SREF 2690.0000 SQ.FT.
(EEFO12)	AVES 3.5-176 OAG7 140 A/B ORBITER	10.000	55.000	16.300	10.000	LREF 1290.3000 IN.
(EEFO13)	AVES 3.5-176 OAG7 140 A/B ORBITER	15.000	55.000	16.300	10.000	BREF 936.6300 IN.
						YREF 1076.4800 IN.
						ZREF 375.0000 IN.
						SCALE .0150

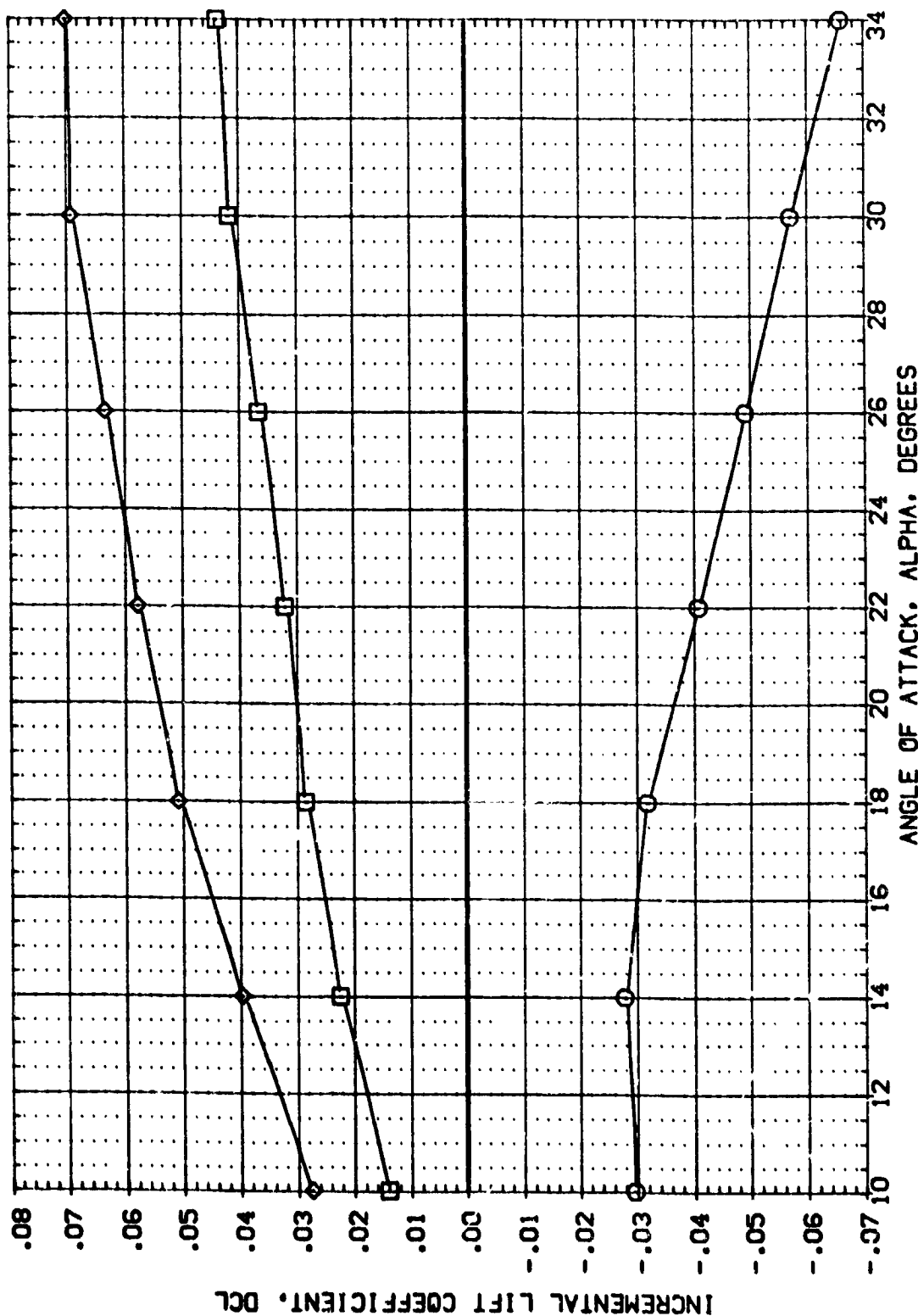


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EF014)	AVES 3.5-176 OAB7 140 A/B DBR1TER	-40.000	55.000	16.300	10.000	SREF 2650.0000 SQ.FT.
(EF012)	AVES 3.5-176 OAB7 140 A/B DBR1TER	10.000	55.000	16.300	10.000	LREF 1250.3000 IN.
(EF013)	AVES 3.5-176 OAB7 140 A/B DBR1TER	15.000	55.000	16.300	10.000	BREF 936.6800 IN.
						XREF 1076.4800 IN.
						YREF 375.0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

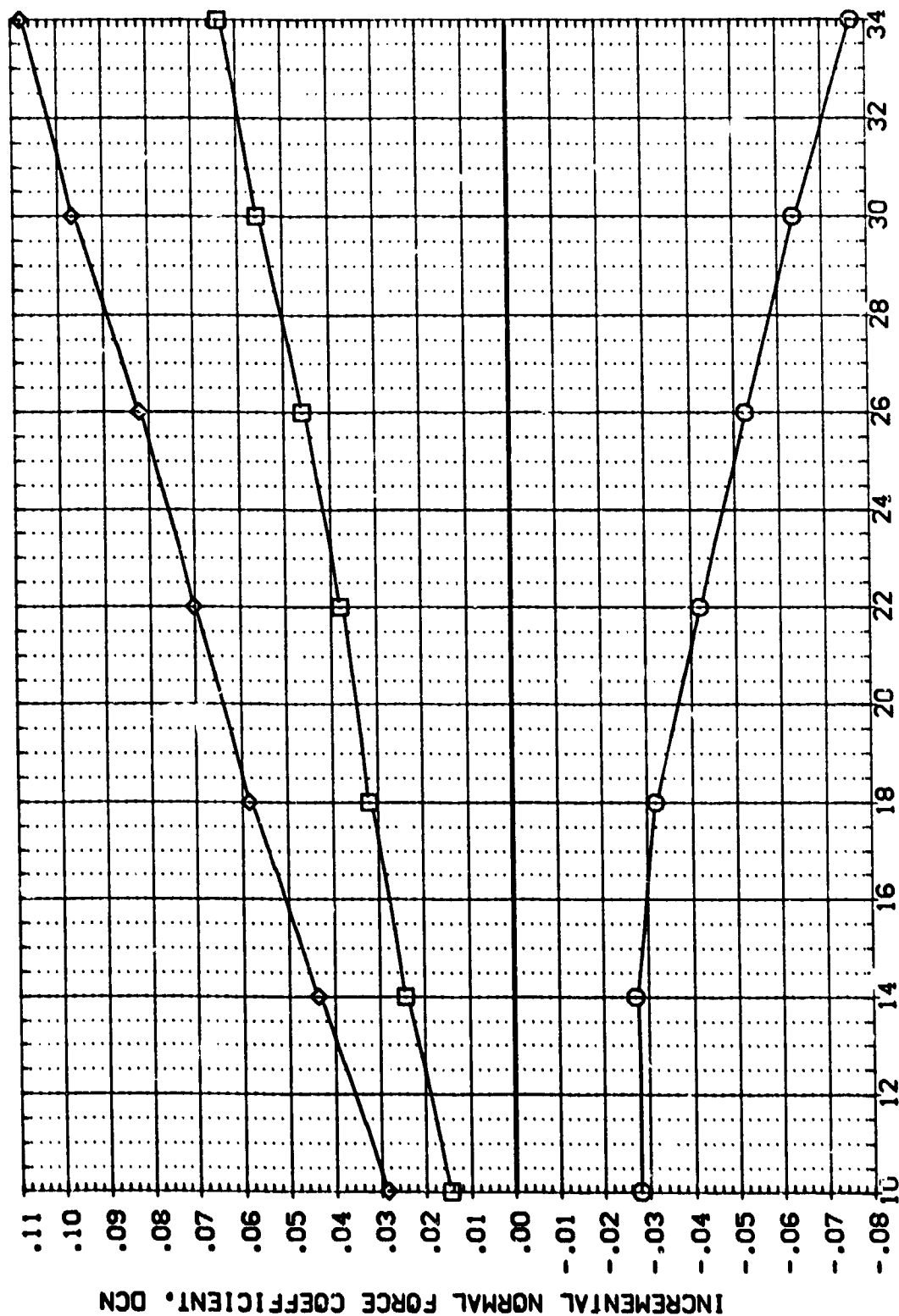


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EEFO14)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	16.300	10.000	SREF 2650.0000 SQ.FT.
(EEFO12)	AVES 3.5-176 OAB7 140 A/B ORBITER	15.000	55.000	16.300	10.000	LREF 1250.3000 IN.
(EEFO13)	AVES 3.5-176 OAB7 140 A/B ORBITER		55.000	16.300	10.000	BREF 936.6800 IN.
						YMRP 1076.4800 IN.
						ZMRP .0000 IN.
						SCALE 375.0000 IN.
						SCALE .0150

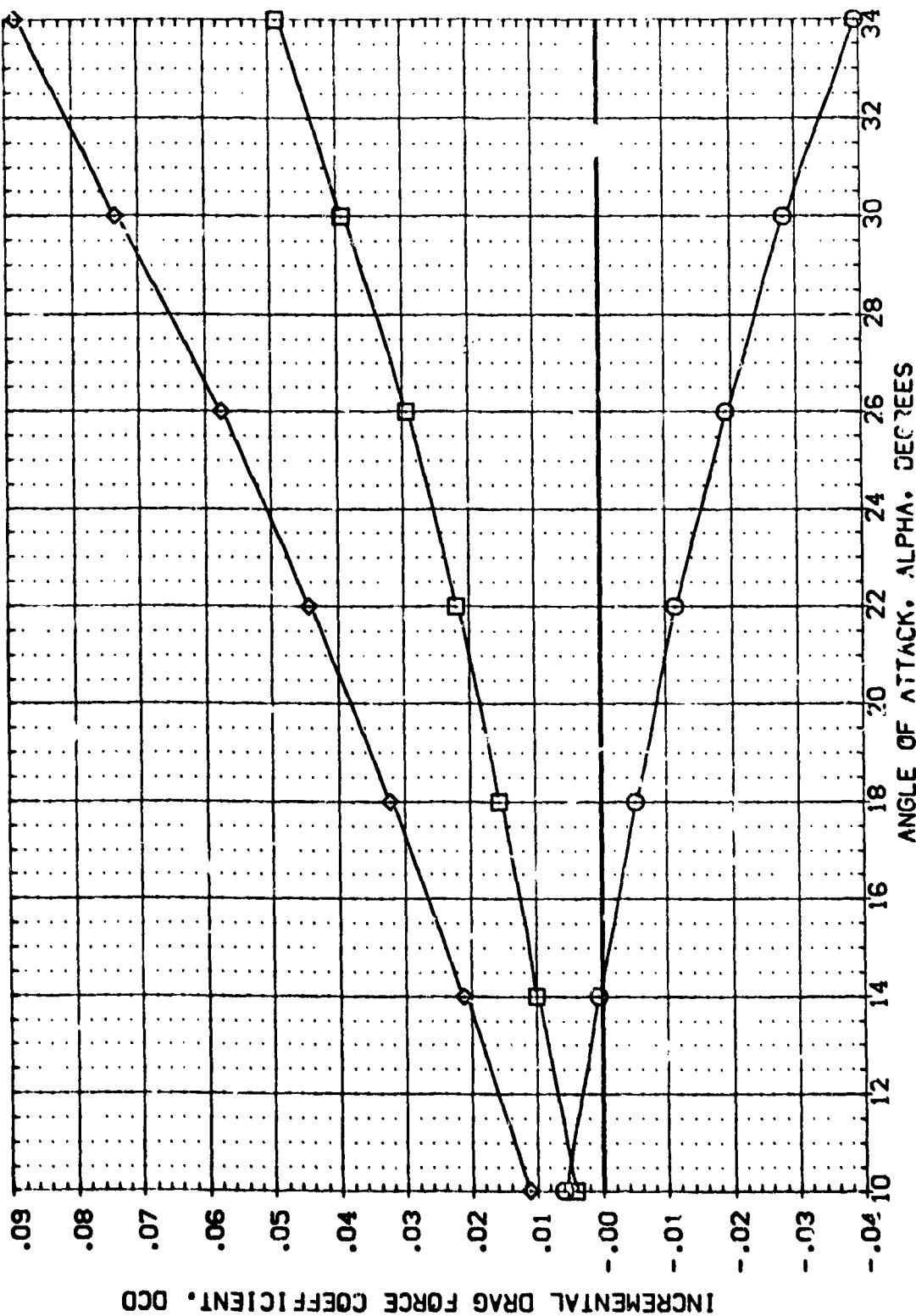


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

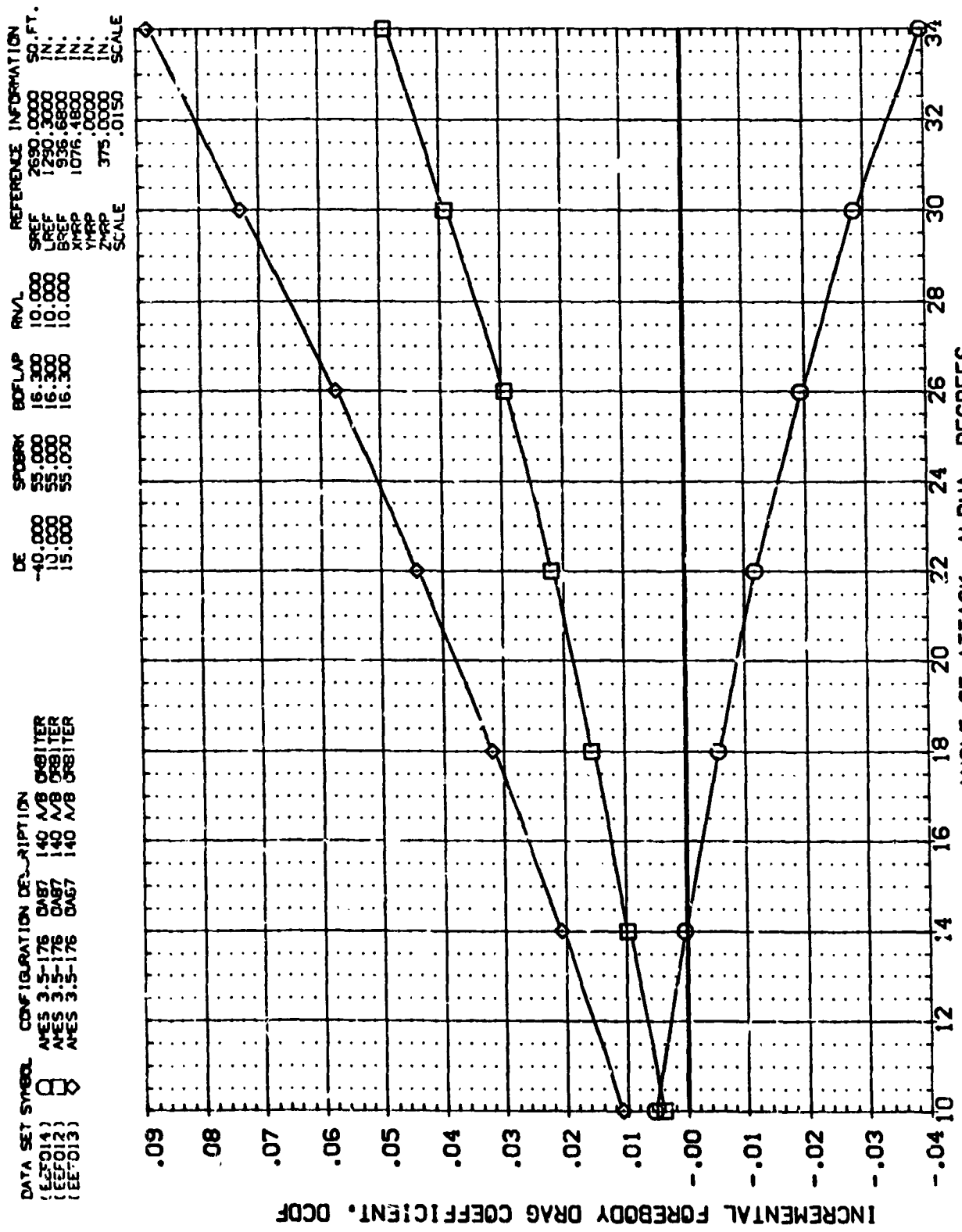


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(M)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPDRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EE014)	AMES 3.5-176 DAB7 140 A/B DBR/ITER	40.000	55.000	16.300	10.000	SREF 2690.0000 SQ.FT.
(EE012)	AMES 3.5-176 DAB7 140 A/B DBR/ITER	10.000	55.000	16.300	10.000	LREF 1230.3000 IN.
(EE013)	AMES 3.5-176 DAB7 140 A/B DBR/ITER	15.000	55.000	16.300	10.000	BREF 936.6800 IN.
						YMRP 1076.4800 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

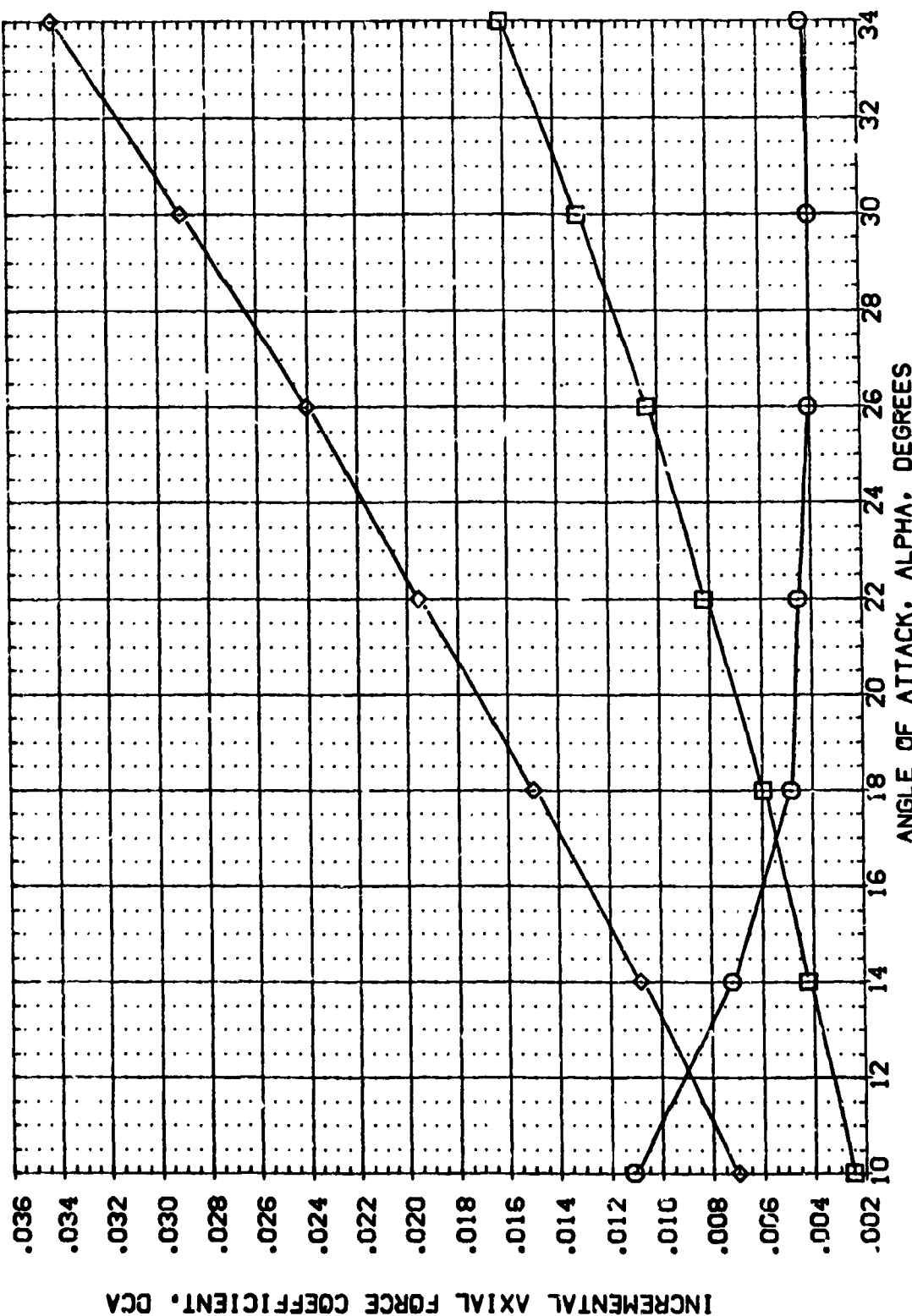


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(M)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EFO14)	AVES 3.5-176 OAG7 140 A/B OGB/ITER	-10.000	55.000	16.300	10.000	SREF 2690.0000 SQ.FT.
(EFO12)	AVES 3.5-176 OAG7 140 A/B OGB/ITER	10.000	55.000	16.300	10.000	LREF 1290.3000 IN.
(EFO13)	AVES 3.5-176 OAG7 140 A/B OGB/ITER	15.000	55.000	16.300	10.000	BREF 938.6800 IN.
						AMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

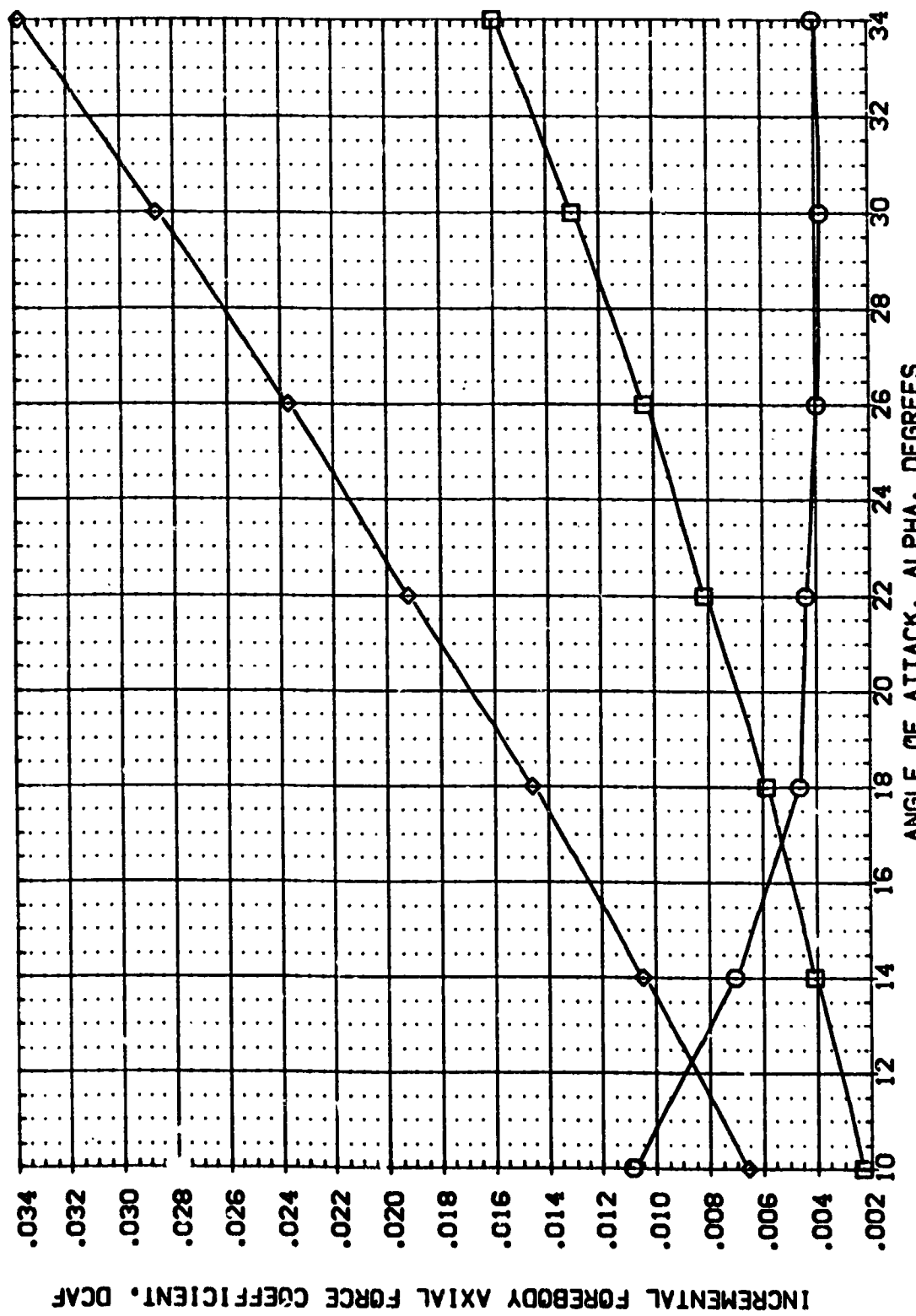


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3
(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		REFERENCE INFORMATION	
(EFP014)	ES 3.5-176	QAB7	140 A/B DB/ITER	SREF	2650.0000
(EFP012)	ES 3.5-176	QAB7	140 A/B DB/ITER	LREF	1230.3000
(EFP013)	ES 3.5-176	QAB7	140 A/B DB/ITER	SREF	930.6800
				XREF	1076.4800
				YREF	375.0000
				ZREF	0.0150
				SCALE	0.0150

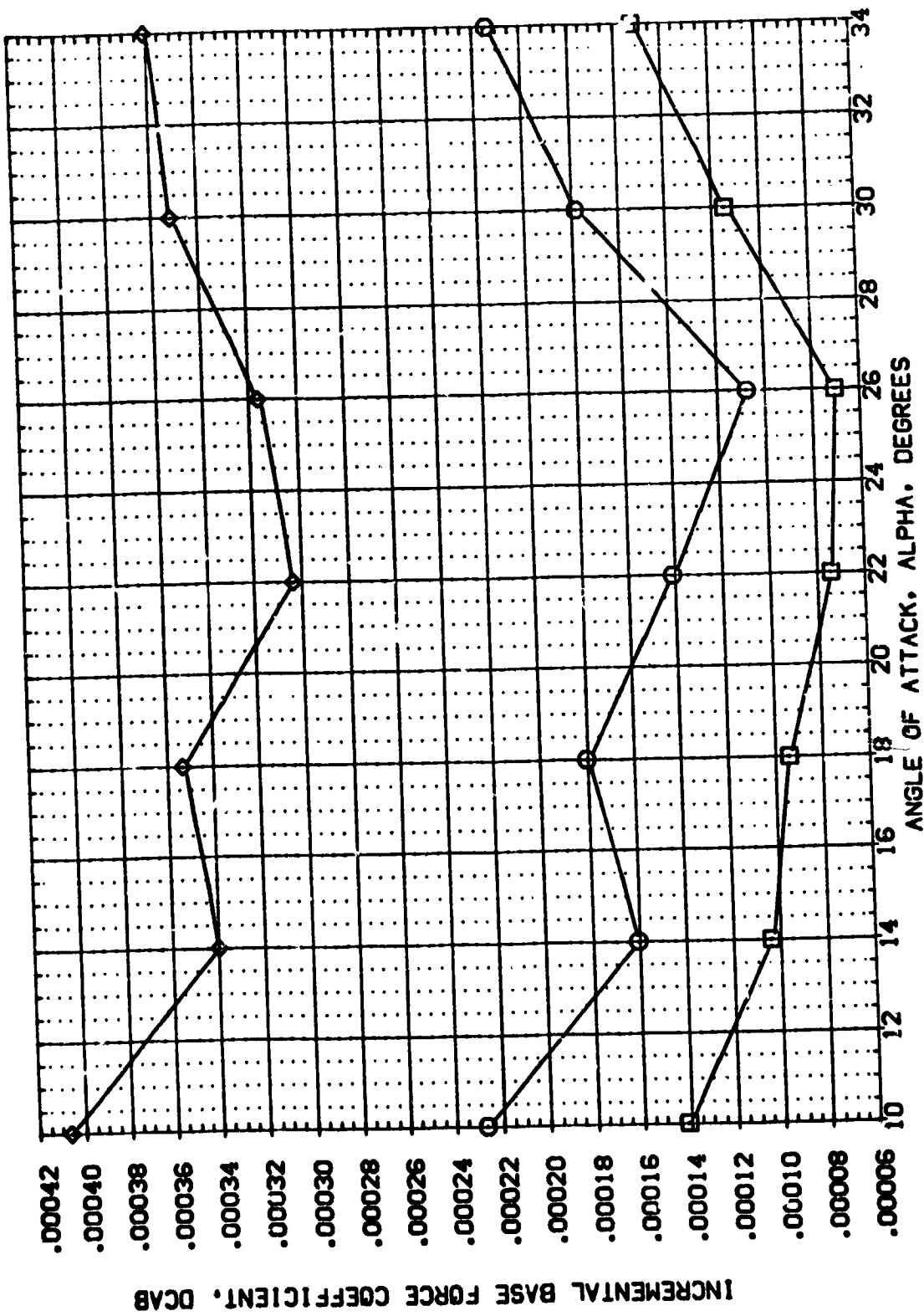


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BD/FLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPDRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EEFO14)	AVES 3.5-176 DAG7 140 A/B ORBITER	-10.000	55.000	16.300	10.000	SREF 2690.0000 50. FT.
(EEFO12)	AVES 3.5-176 DAG7 140 A/B ORBITER	10.000	55.000	16.300	10.000	LREF 1250.3000 IN.
(EEFO13)	AVES 3.5-176 DAG7 140 A/B ORBITER	15.000	55.000	16.300	10.000	BREF 936.6800 IN.
						XTRP 1076.4800 IN.
						YTRP .0000 IN.
						ZTRP 375.0000 IN.
						SCALE .0150

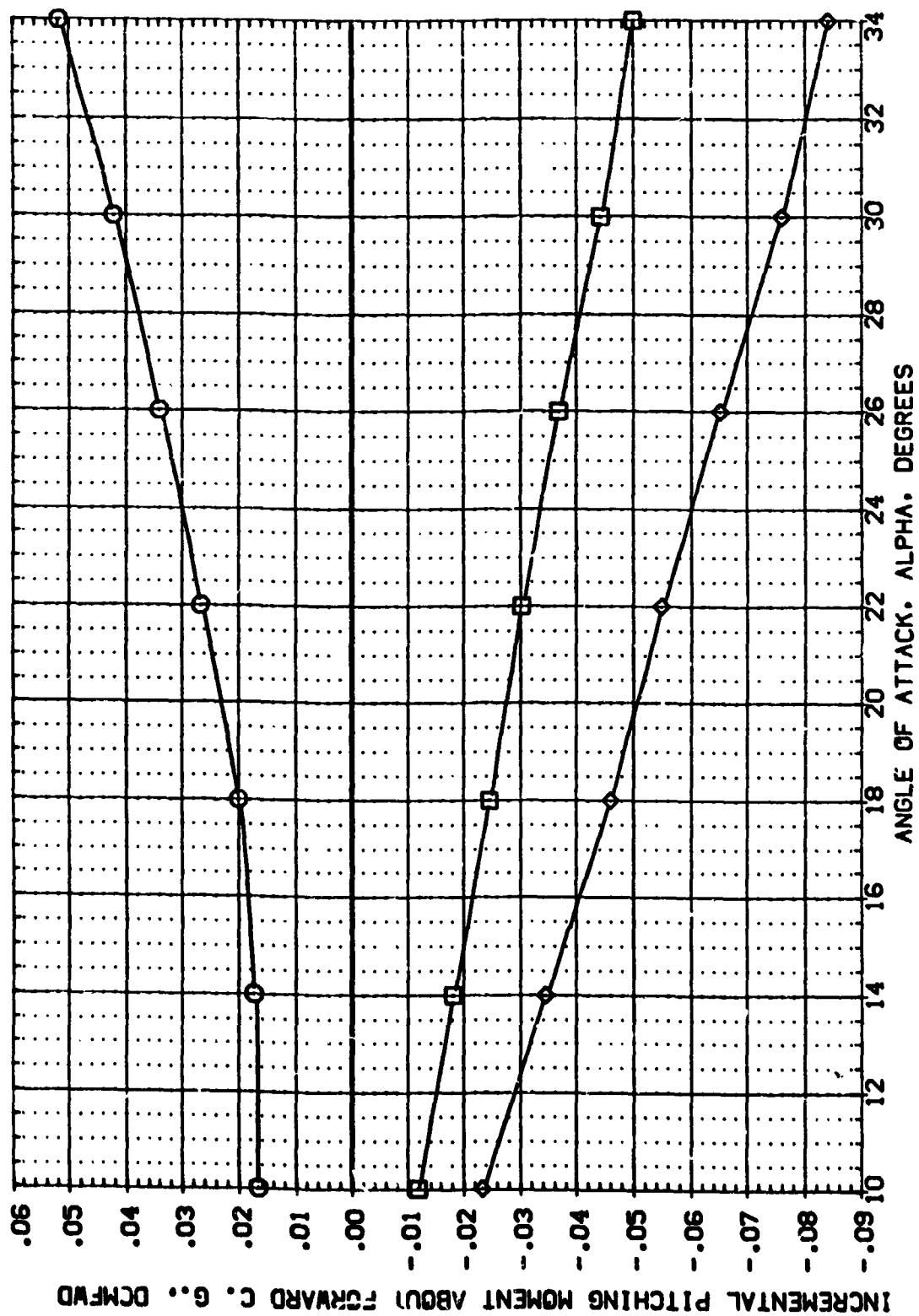


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPEED	BDFLAP	RN/L	REFERENCE INFORMATION
(EEF014)	AVES 3.5-176 DAB7 140 A/B ORBITER	-40.000	55.000	16.303	10.000	SREF 2690.0000 SQ.FT.
(EEF012)	AVES 3.5-176 DAB7 140 A/B ORBITER	10.000	55.000	16.300	10.000	LREF 1.200.000 IN.
(EEF013)	AVES 3.5-176 DAB7 140 A/B ORBITER	15.000	55.000	16.300	10.000	BREF 936.6800 IN.
						XREF 1076.4800 IN.
						YREF 375.0000 IN.
						ZREF .0150 IN.
						SCALE

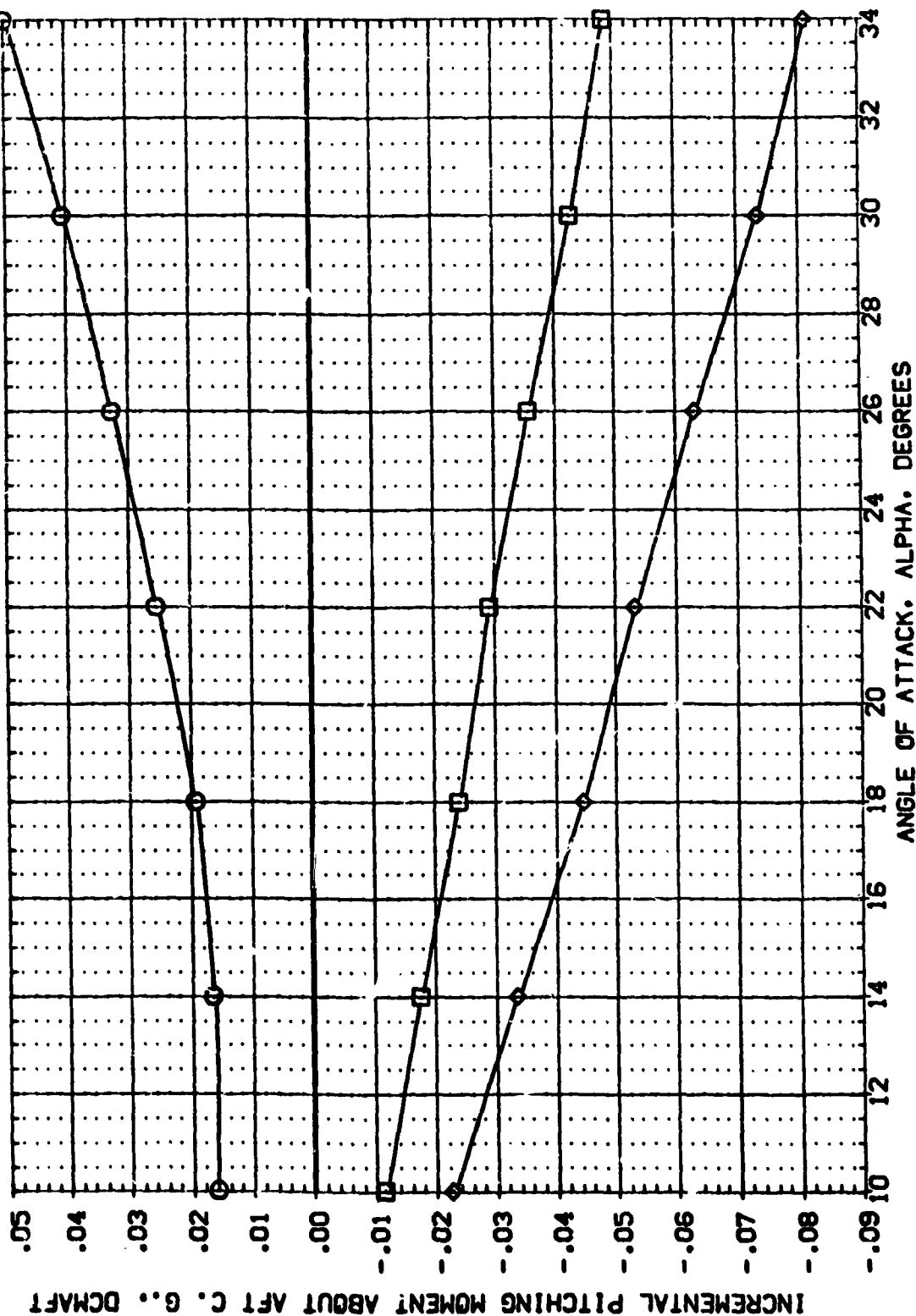


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

AMES 3.5-176 OA87 140 A/B ORBITER (FEF014)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	ELEVON	DATASET	ELEVON	REF	SCALE	REFERENCE INFORMATION
○	10.000	7.320	BETA	.000	FEF014	FEF013	.000	SREF	2690.0000	50. FT.
□	20.000	.000	BOFLAP	16.300	FEF012	FEF013	15.000	LREF	1290.3000	IN.
◇	30.000	.000	SPDRK	55.000	FEF012	FEF013	15.000	BREF	936.6800	IN.
		10.000	RVL					XREF	1076.4800	IN.
								YREF	375.0000	IN.
								ZREF	375.0000	IN.
								SCALE	.0150	SCALE

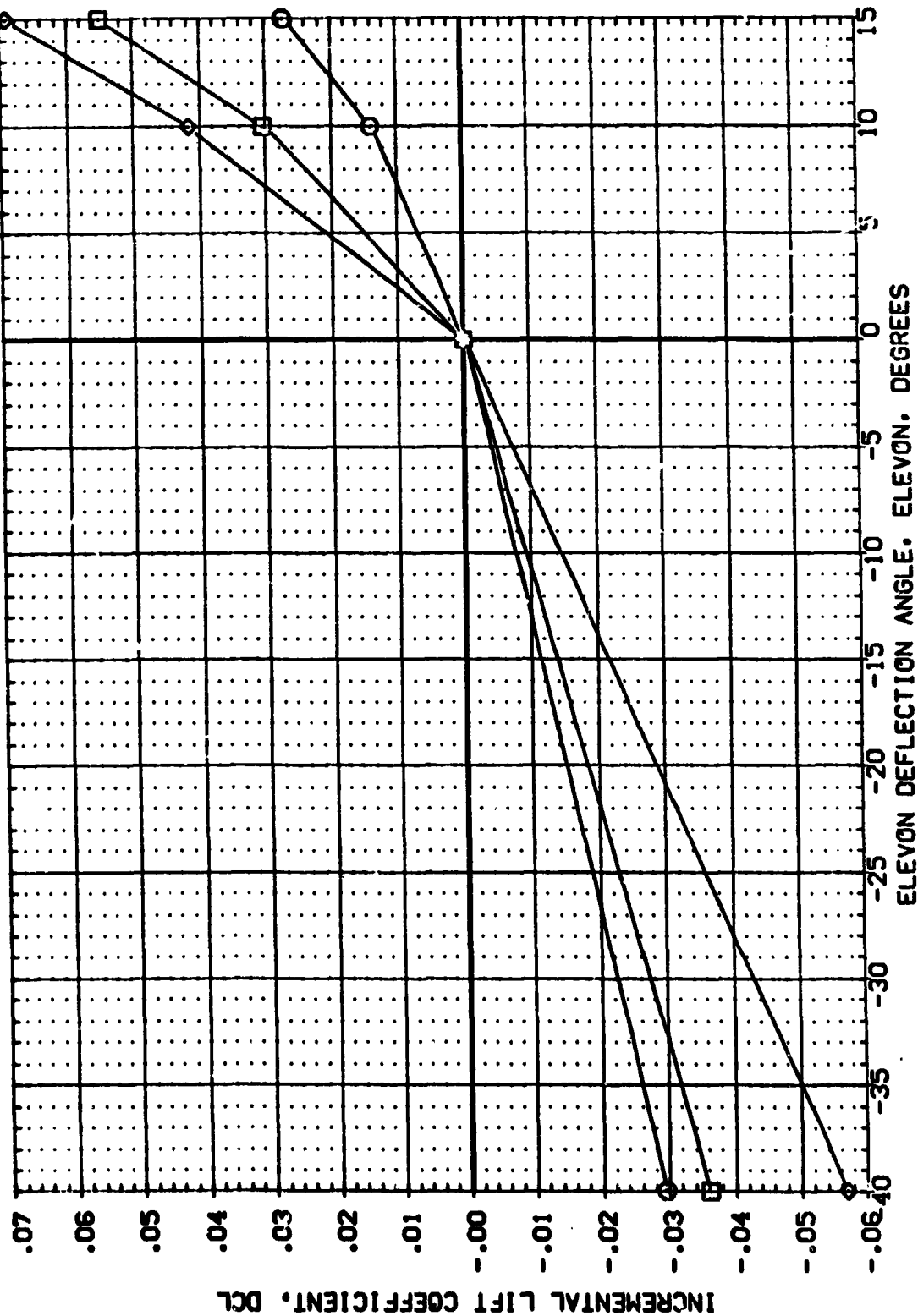


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=16.3

AMES 3.5-176 OA87 140 A/B ORBITER (FEF014)

SYMBOL		ALPHA		PARAMETRIC VALUES				DATA SOURCE		REFERENCE INFORMATION			
○	10.000	MACH	7.320	BETA	.000	DATASET	ELEVON	ELEVON	SREF	2890.0000	SQ. FT.		
□	20.000	AIRLON	.000	BOFLAP	16.300	FEF014	-40.000	FEF015	LREF	1290.3000	IN.		
◇	30.000	RUDDER	.000	SPDRK	55.000	FEF012	10.000	FEF013	BREF	936.6800	IN.		
		RN/L	10.000						XMRP	1076.4800	IN.		
									YMRP	.0000	IN.		
									ZMRP	375.0000	IN.		
									SCALE	.0150	SCALE		

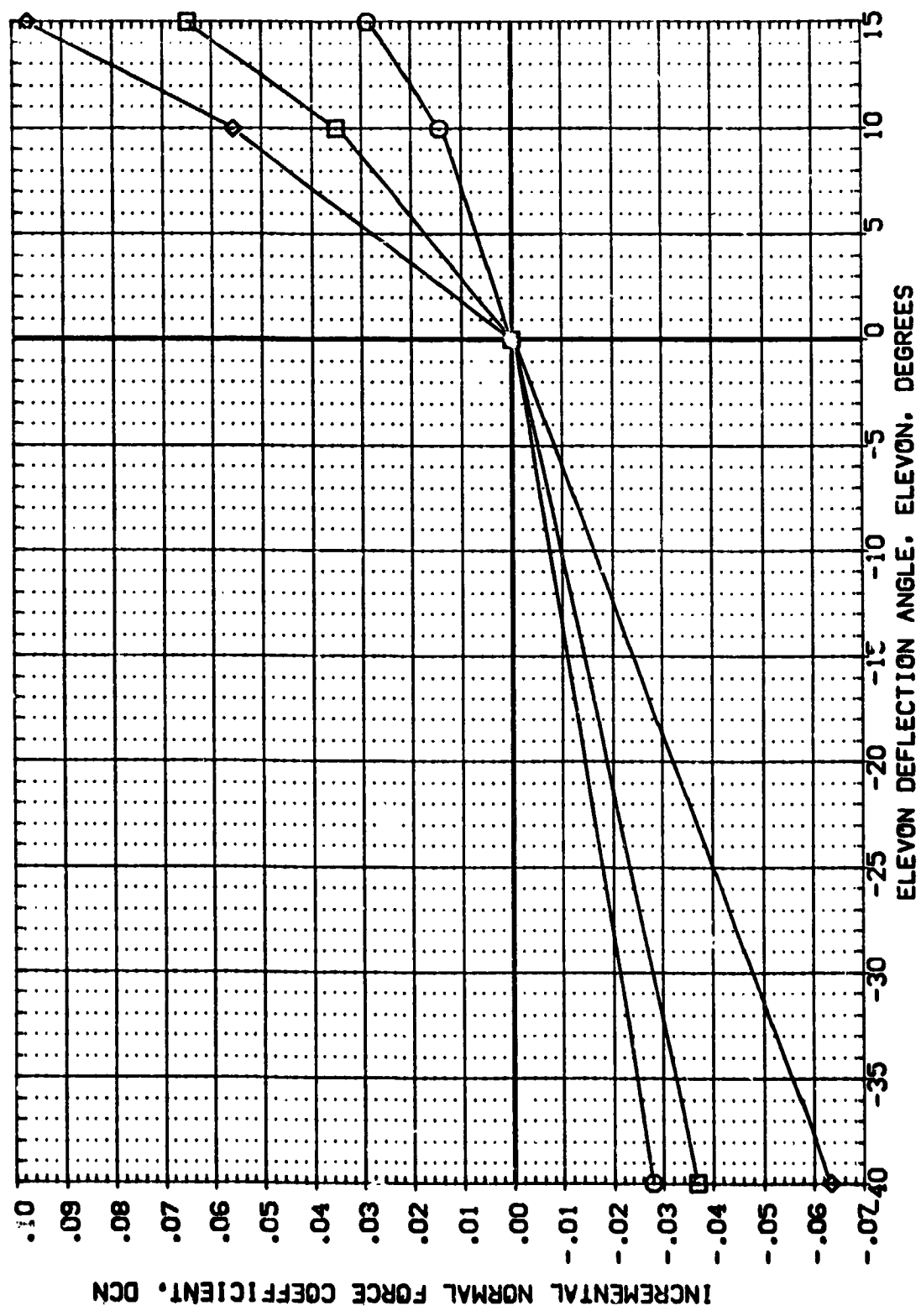


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=16.3

AMES 3.5-176 0A87 140 A/B ORBITER (FEF014)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES		DATA SOURCE		ELEVON		REFERENCE INFORMATION	
□	10.000	11.000	7.320	BETA	.000	FEF014	16.300	FEF014	SREF	2650.0000
○	20.000	11.000	.000	BOFLAP	16.300	FEF014	-40.000	FEF014	LREF	1230.3000
◇	30.000	11.000	.000	SP08RK	55.000	FEF012	10.000	FEF013	BREF	936.6800
			10.000						XREF	1076.4800
									YREF	375.0000
									ZREF	375.0000
									SCALE	.0150
										50.FT.

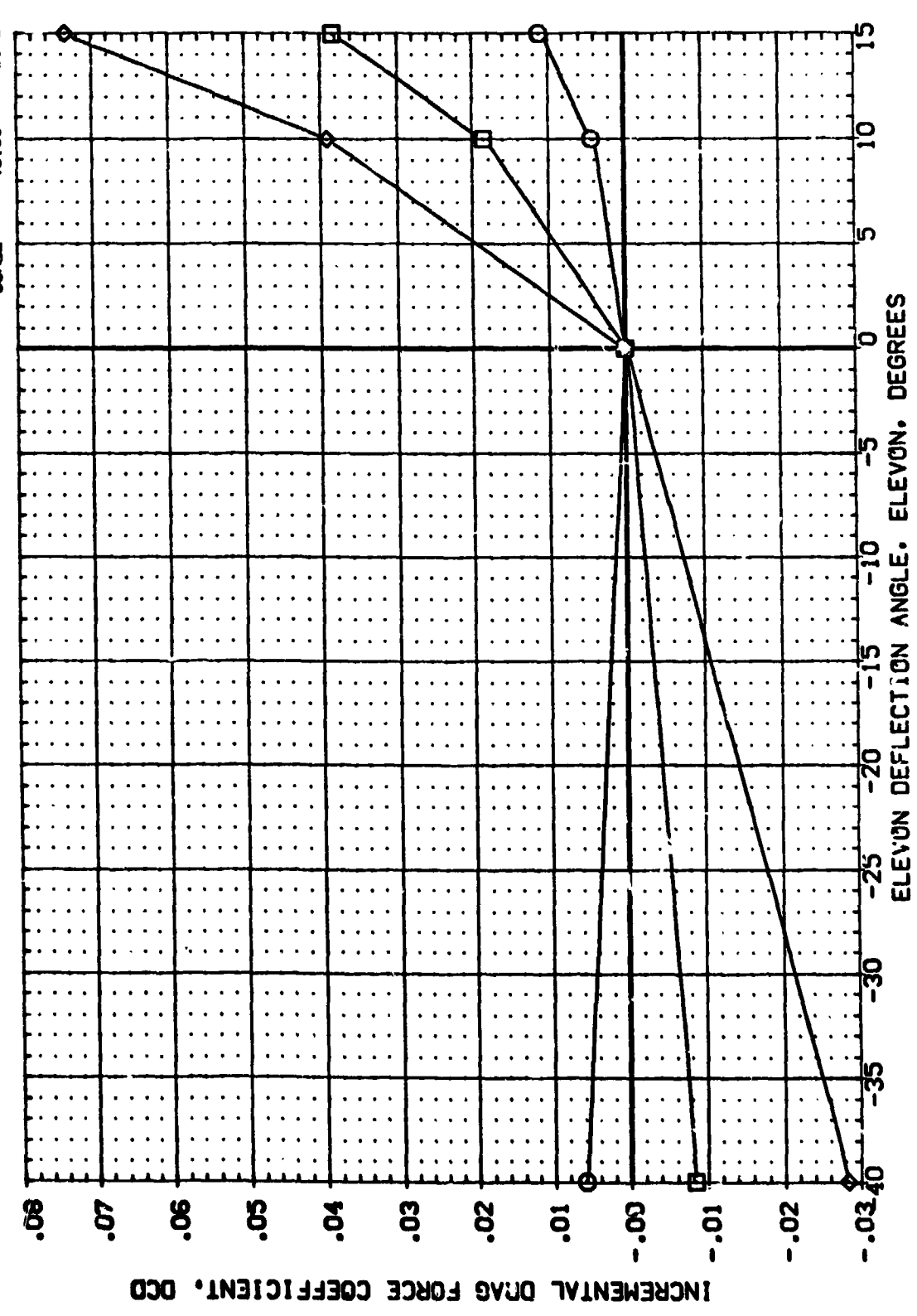


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=16.3

(FEF014)

AME3 3.5-176 0A87 140 A/B ORBITER

SYMBOL	PARAMETRIC VALUES			DATA SOURCE		REFERENCE INFORMATION	
	ALPHA	MACH	BETA	ELEVON	DATA SET	SREF	SO.FT.
○	10.000		7.320		.000	1250.0000	IN.
□	20.000	AILRON	.000	-40.000	FEF014	1250.0000	IN.
◇	30.000	BLDDR	.000	10.000	FEF015	536.6800	IN.
		RN/L	10.000		FEF012	1076.4800	IN.
						375.0000	IN.
						SCALE	SCALE

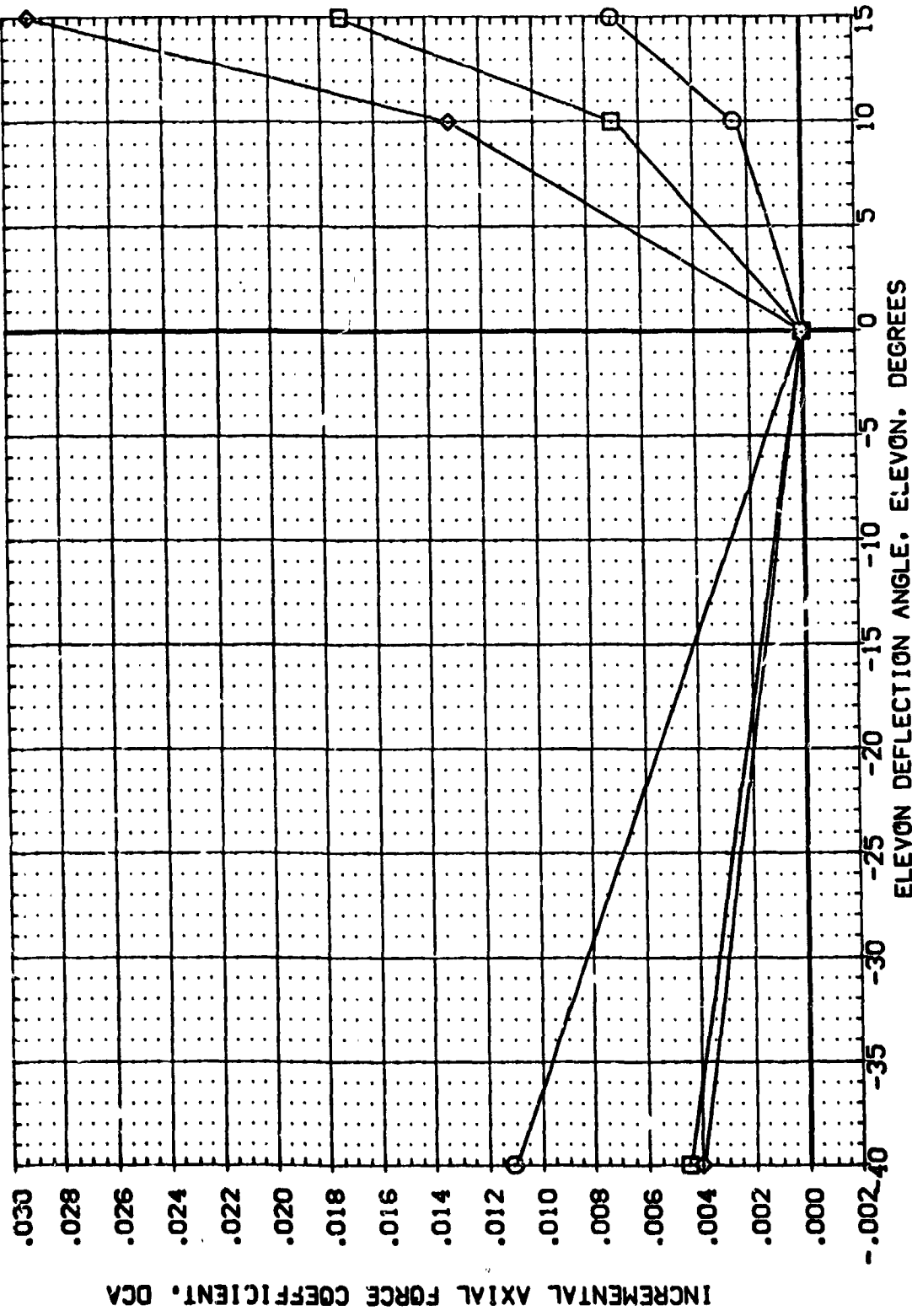


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=16.3

AMES 3.5-176 0A87 140 A/B ORBITER (FEF014)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	ELEVON	DATASET	ELEVON	SREF	REFERENCE INFORMATION
○	10.000		7.320 BETA	.000 DATASET	-40.000	FEF015	.000	2690.0000	50. FT.
□	20.000	A1URON	.000 BDFLAP	16.300 FEF014	10.000	FEF013	15.000	1290.3000	IN.
◇	30.000	RJDOER	.000 SPOBRK	55.000 FEF012				936.6800	IN.
		RV/L	10.000					1076.4800	IN.
								375.0000	IN.
								SCALE	SCALE

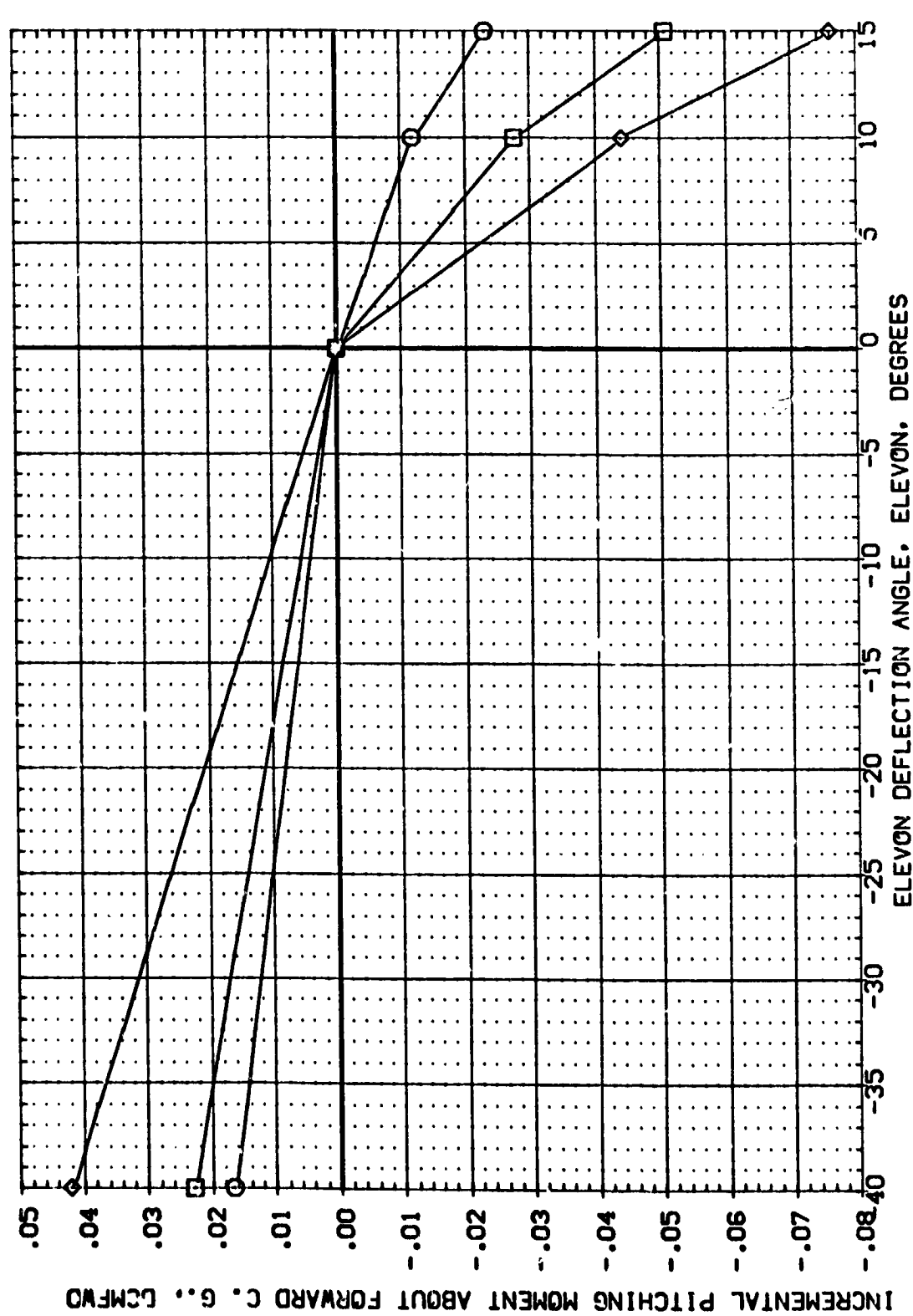


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

AMES 3.5-176 0A87 140 A/B ORBITER (FEF014)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	ELEVON	DATA SET	ELEVON	REFERENCE INFORMATION
○	10.000		7.320 BETA	.000 DATASET	-40.000	FEF014	.000	SREF 2630.0000 SO.FT.
□	20.000	AILRON	.000 BDFLAP	16.300 FEF014	10.000	FEF015	.000	LREF 1250.3000 IN.
◇	30.000	RUDER	.000 BDFLAP	55.000 FEF012	10.000	FEF013	.000	BREF 936.6800 IN.
		RN/L	10.000				.000	XMRP 1076.4800 IN.
							.000	ZMRP 375.0000 IN.
							.0150	SCALE

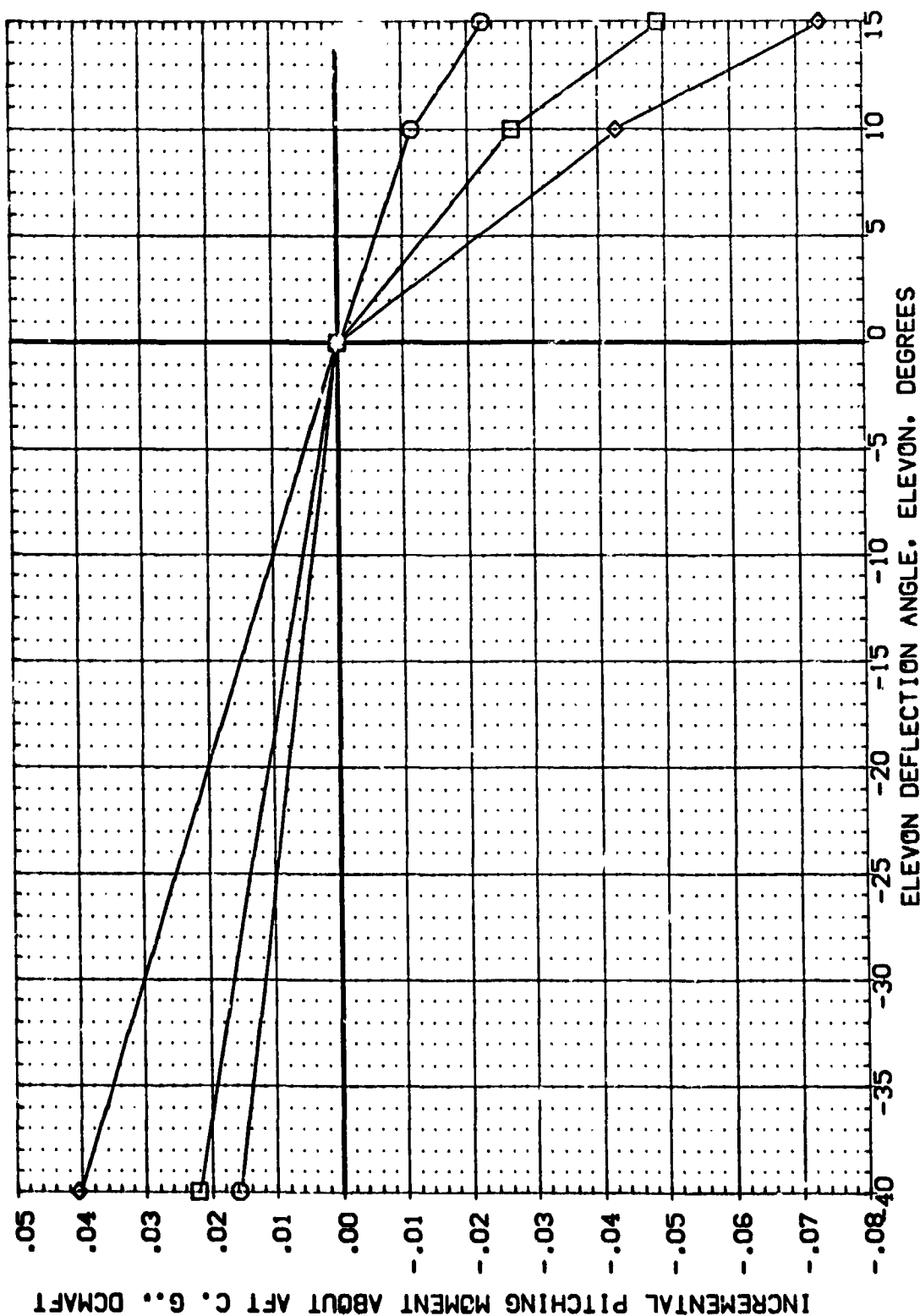


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPODBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF017)	APES 3.5-176 QAB7 140 A/B ORBITER	-40.000	55.000	-11.700	10.000	SREF 2690.0000 SQ.FT.
(BEF016)	APES 3.5-176 QAB7 140 A/B ORBITER	10.000	55.000	-11.700	10.000	LREF 1290.3000 IN.
(BEF018)	APES 3.5-176 QAB7 140 A/B ORBITER	10.000	55.000	-11.700	10.000	BREF 936.6800 IN.
						YMRP 1076.4800 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

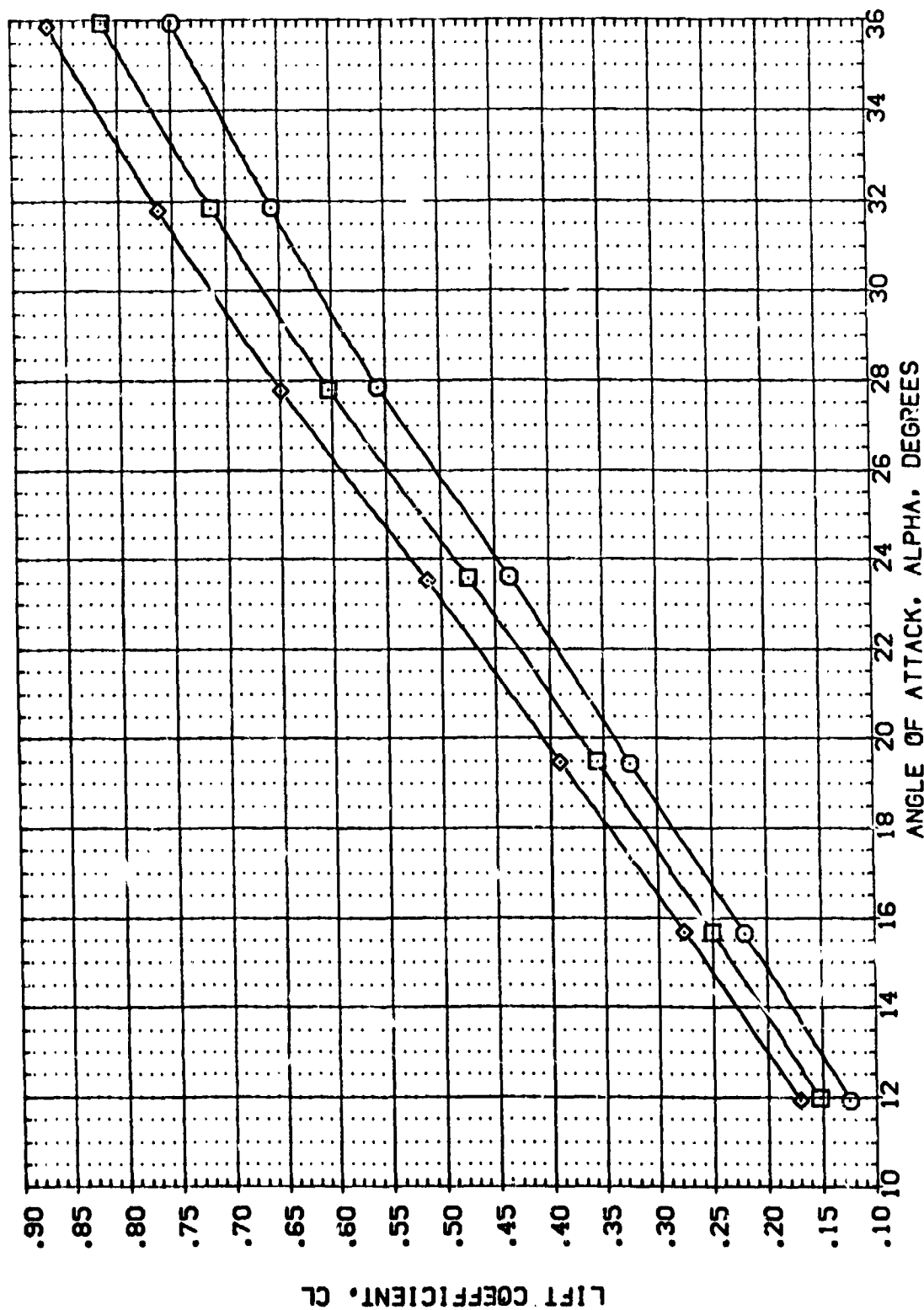
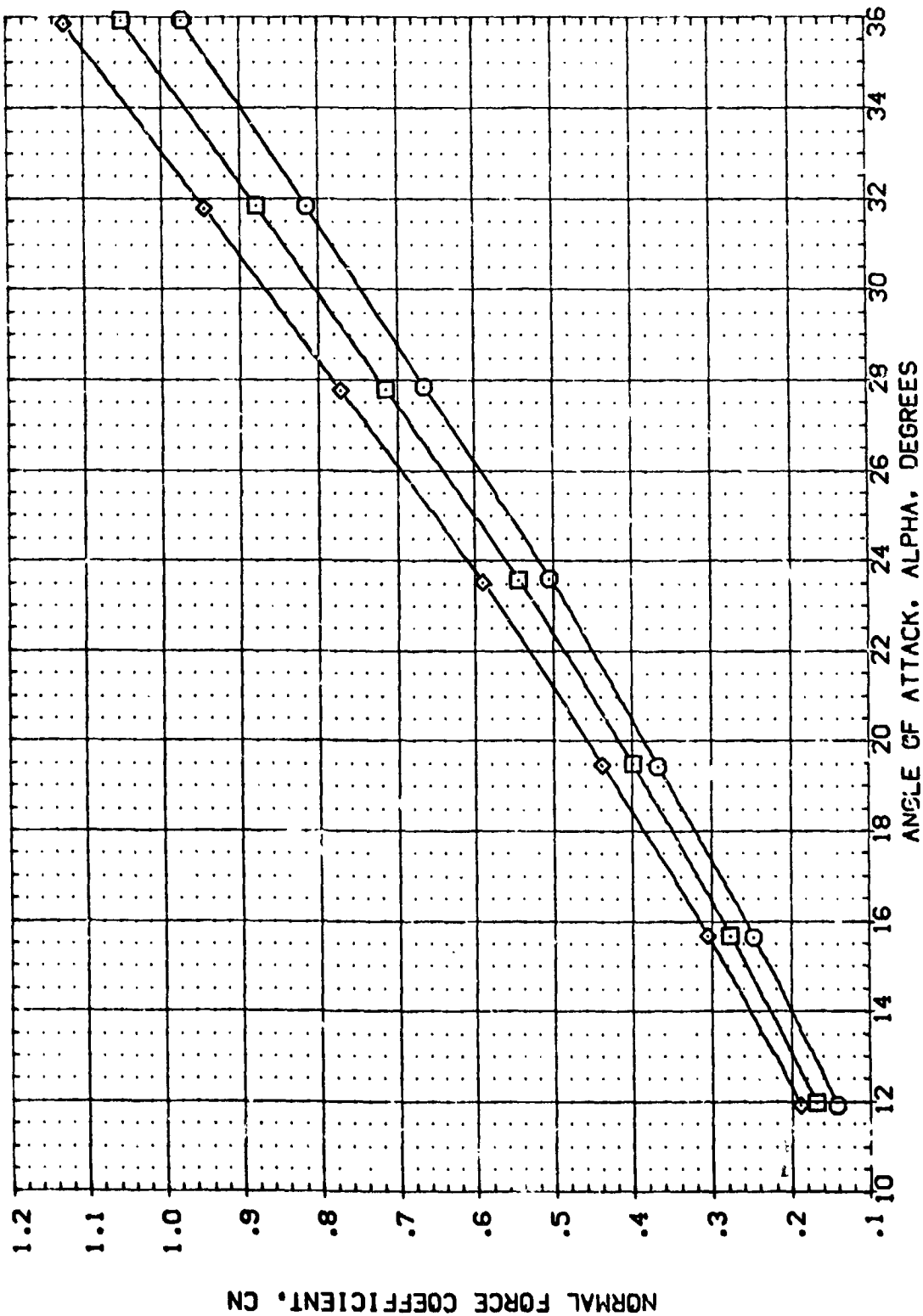


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF017)	AVES 3.5-176 OAB7 140 A/B ORBITER	0.000	55.000	-11.700	10.000	SREF 2690.0000 SQ.FT.
(BEF016)	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	-11.700	10.000	LREF 1290.3000 IN.
(BEF018)	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	-11.700	10.000	BREF 936.6800 IN.
						XREF 1076.4800 IN.
						YREF 375.0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO17)	AMES 3.5-176 DAB7 140 A/B ODB/ITER	-40.000	55.000	-11.700	10.000	9007 2500.0000 50. FT.
(BEFO16)	AMES 3.5-176 DAB7 140 A/B ODB/ITER	.000	55.000	-11.700	10.000	1200 2500 50. IN.
(BEFO18)	AMES 3.5-176 DAB7 140 A/B ODB/ITER	10.000	55.000	-11.700	10.000	500 2500 50. IN.
						1075 4800 50. IN.
						375 0000 50. IN.
						SCALE .0150

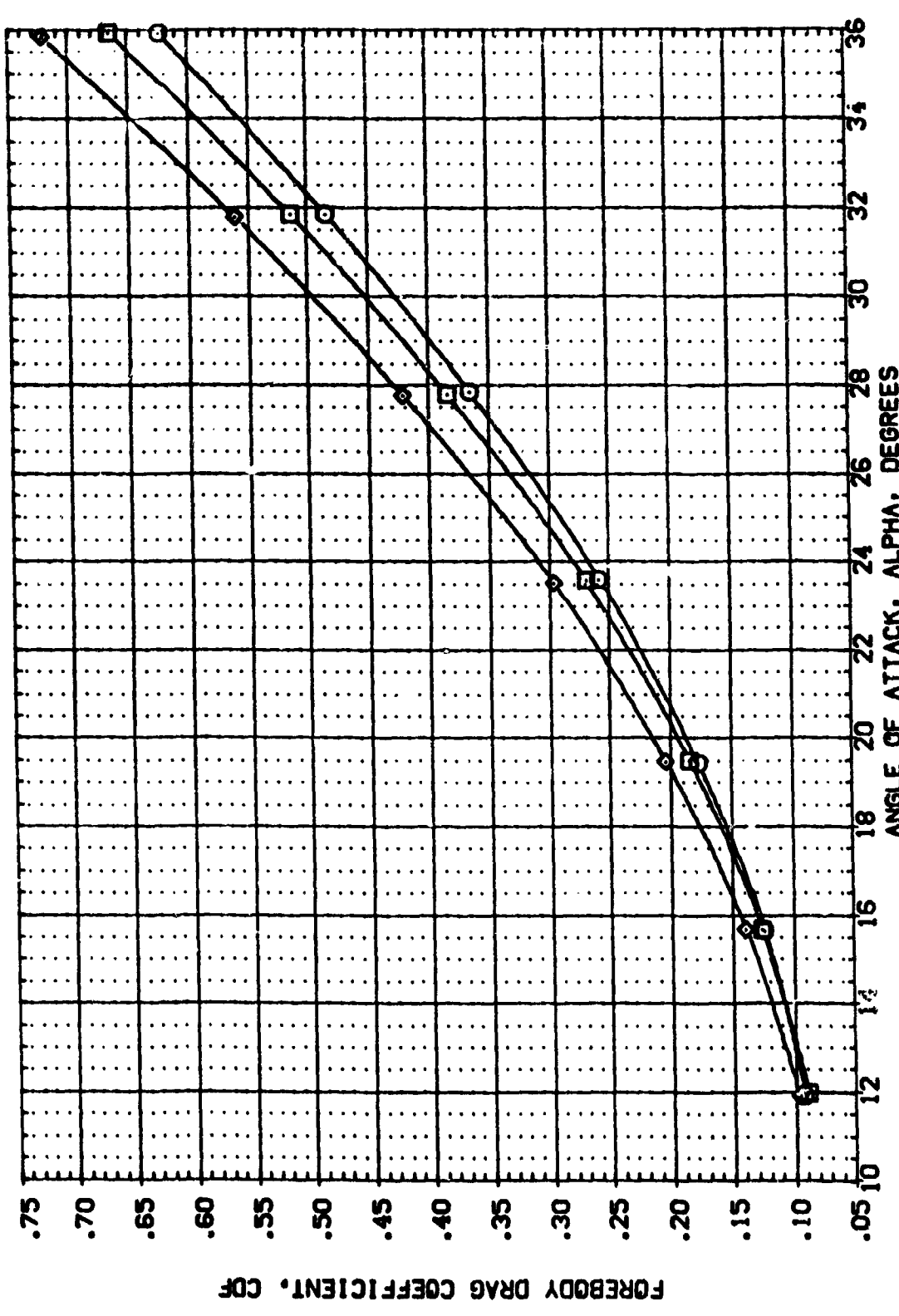


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRN	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF017)	AWES 3.5-176 CAS7 140 A/B CRBITER	-40.000	55.000	-11.700	10.000	987 2850.0000 30. FT.
(BEF016)	AWES 3.5-176 CAS7 140 A/B CRBITER	0.000	55.000	-11.700	10.000	LAG 1250.0000 IN.
(BEF018)	AWES 3.5-176 CAS7 140 A/B CRBITER	10.000	55.000	-11.700	10.000	SPR 505.6800 IN.
						TRAP 1076.4800 IN.
						TRAP 375.0000 IN.
						SCALE .0150 SCALE

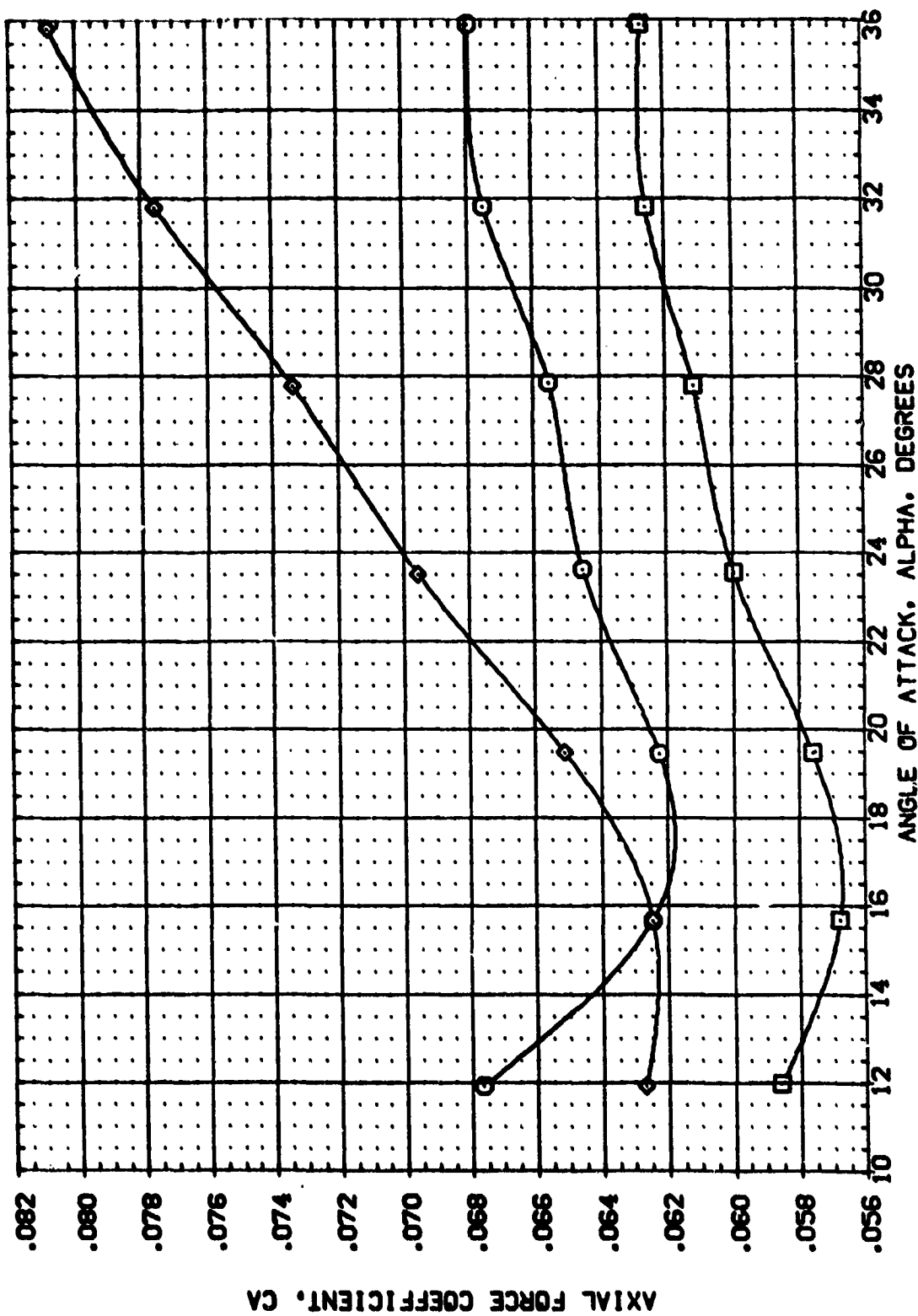


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		ELEVON		SPURK		BOFLAP		RNL		REFERENCE INFORMATION	
(BEF017)	1	AVES 3.5-176	0467	140 A/B	0467	140 A/B	0467	140 A/B	0467	140 A/B	0467	140 A/B	0467
(BEF018)	2	AVES 3.5-176	0467	140 A/B	0467	140 A/B	0467	140 A/B	0467	140 A/B	0467	140 A/B	0467
SNET 2880.0000 80.000 LNET 1250.3000 10.000 PREP 536.8800 10.000 YARP 1076.4800 10.000 ZARP 375.0000 10.000 SCALE .0150													

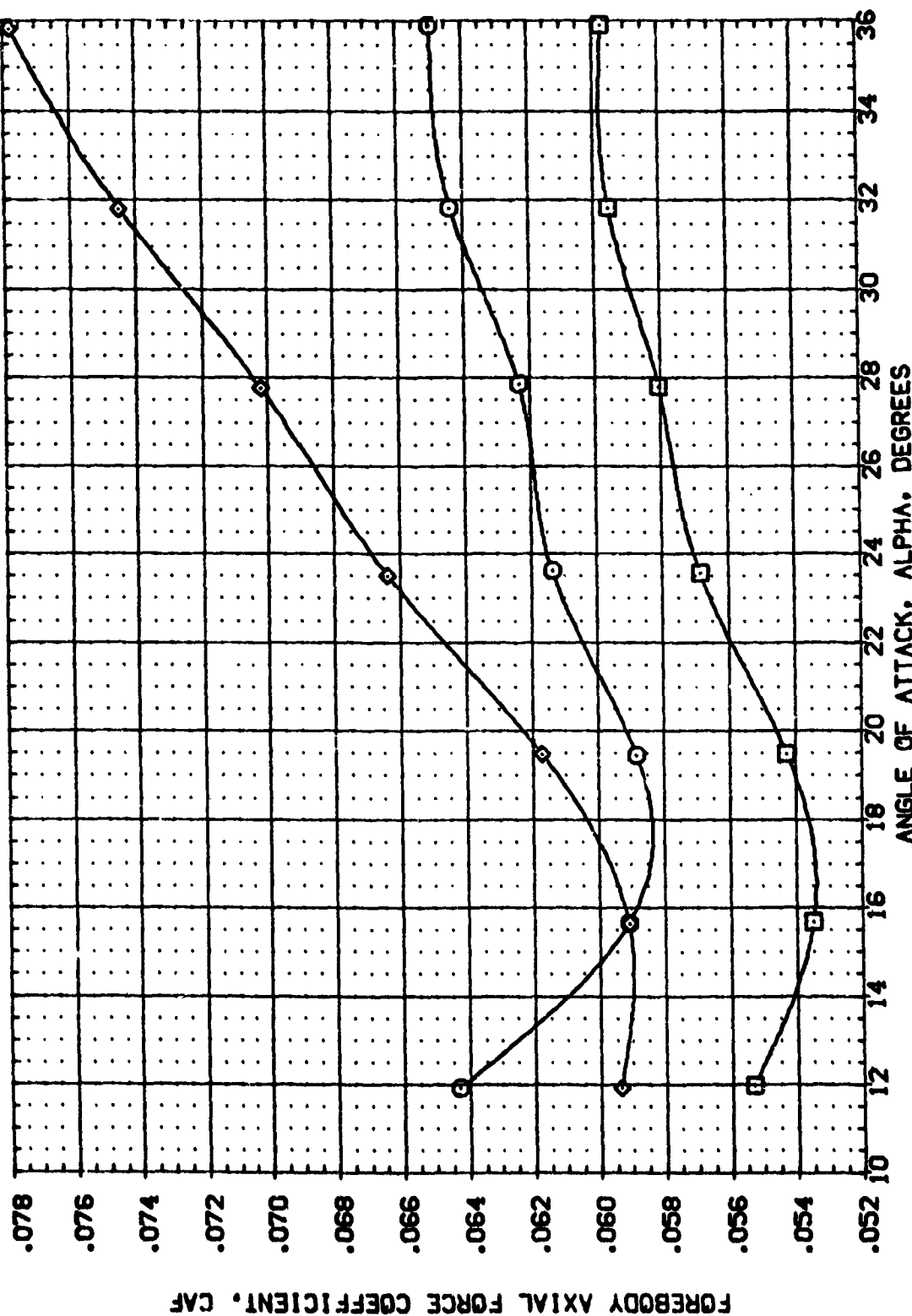


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEP017)	AKES 3.5-176 OAS7 140 A/B OAS1TER	-40.000	55.000	-11.700	10.000	SREF 2850.0000 50. FT.
(BEP016)	AKES 3.5-176 OAS7 140 A/B OAS1TER	.000	55.000	-11.700	10.000	LREF 1250.3000 IN.
(BEP018)	AKES 3.5-176 OAS7 140 A/B OAS1TER	10.000	55.000	-11.700	10.000	BREF 935.6800 IN.
						XREF 1076.4800 IN.
						YREF 375.0000 IN.
						ZREF 0.0000 IN.
						SCALE .0150

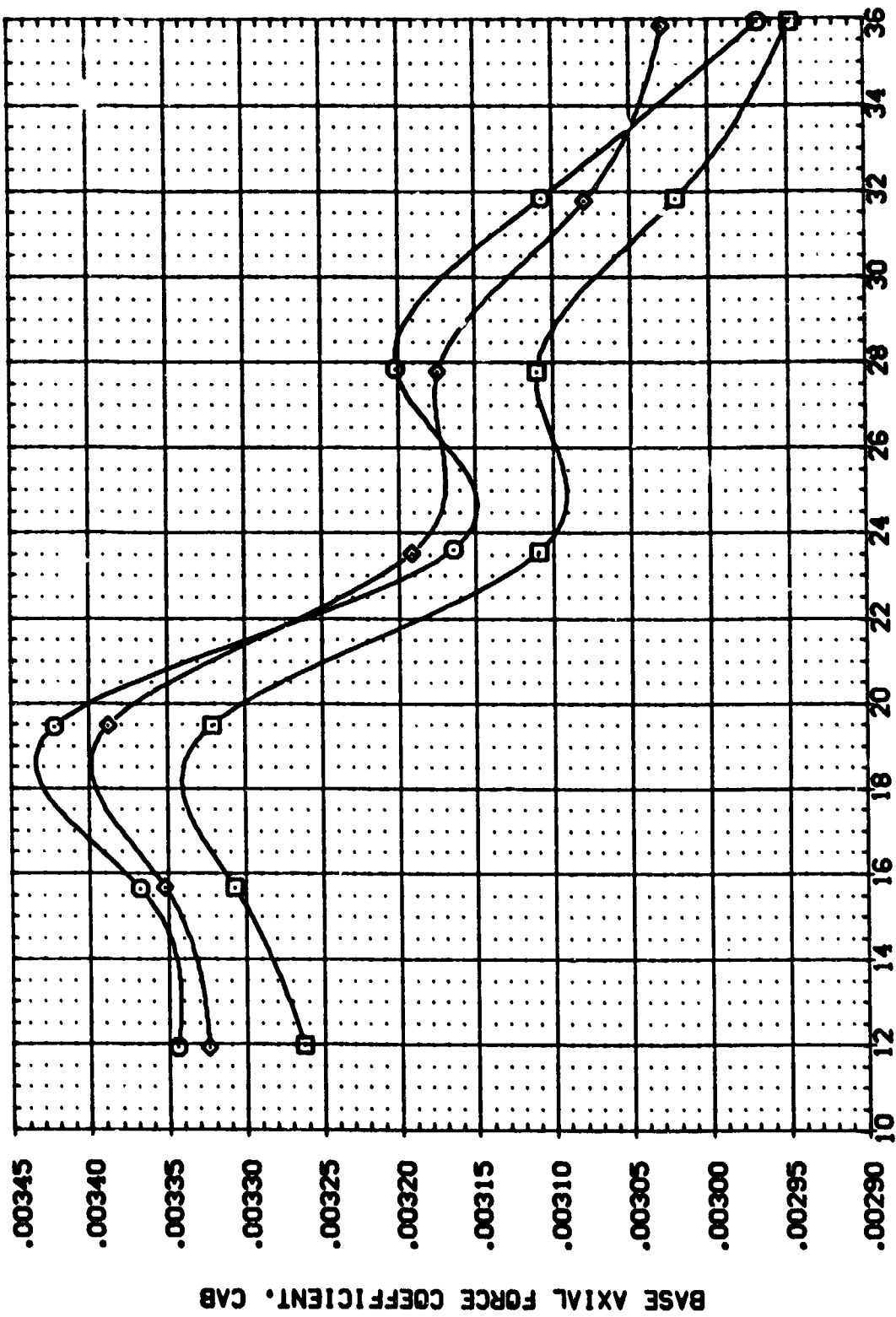


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORING	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFO17)	AVES 3.5-176 CAB7 140 A/B CRIBTER	-10.000	55.000	-11.700	10.000	90.000
(BEFO16)	AVES 3.5-176 CAB7 140 A/B CRIBTER	10.000	55.000	-11.700	10.000	1250.000
(BEFO18)	AVES 3.5-176 CAB7 140 A/B CRIBTER	10.000	55.000	-11.700	10.000	925.000
						1075.000
						375.000
						2445.000
						SCALE
						0.150
						SCALE

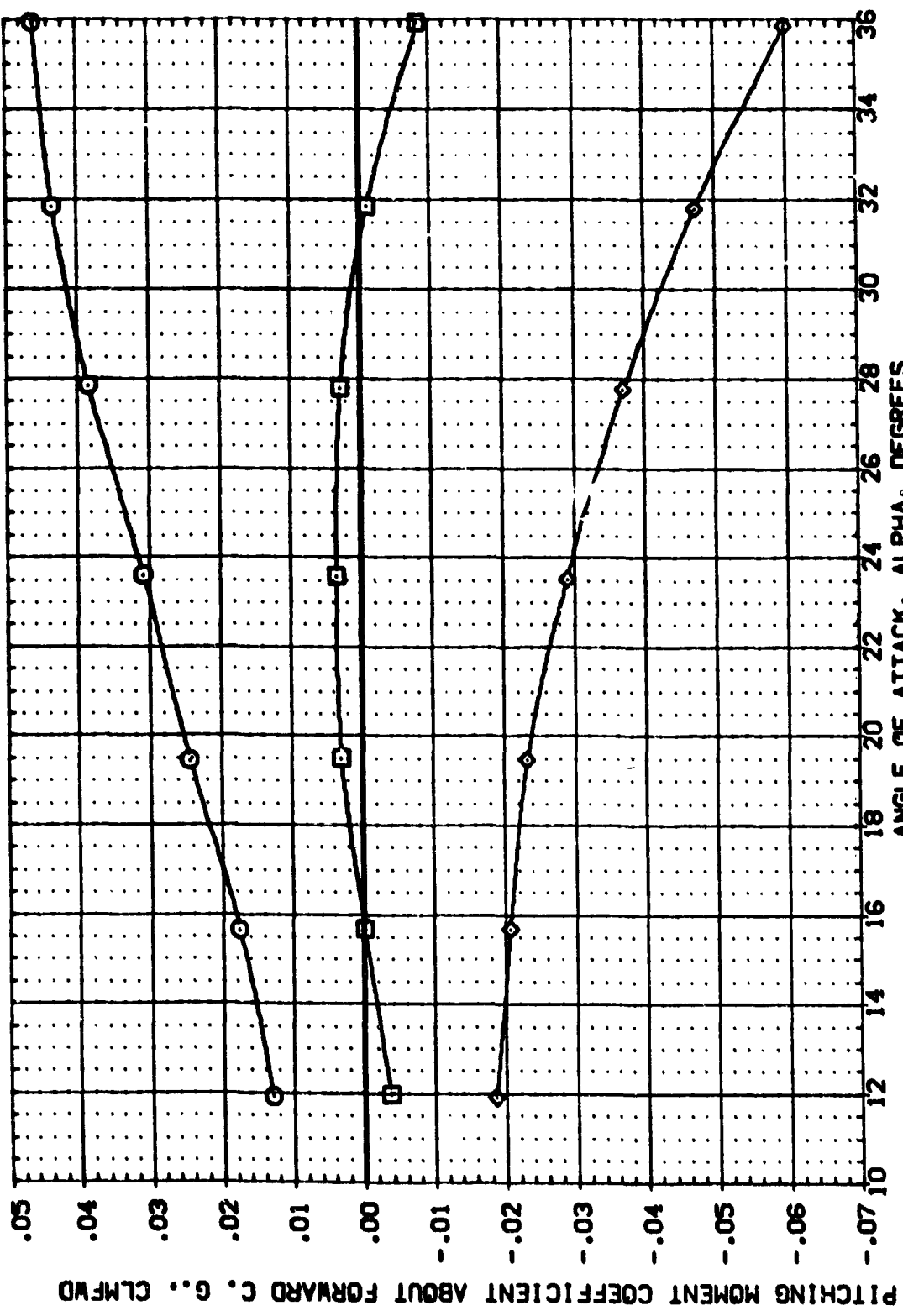


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFD17)	AMES 3.5-176 DAB7 140 A/B DB/ITER	-40.000	55.000	-11.700	10.000	SREF 2690.0000 50.FT.
(BEFD16)	AMES 3.5-176 DAB7 140 A/B DB/ITER	10.000	55.000	-11.700	10.000	LREF 1290.3000 IN.
(BEFD18)	AMES 3.5-176 DAB7 140 A/B DB/ITER	10.000	55.000	-11.700	10.000	BREF 936.6800 IN.
						XREF 1076.4800 IN.
						TRAP 375.0000 IN.
						ZTRAP 375.0000 IN.
						SCALE .0150

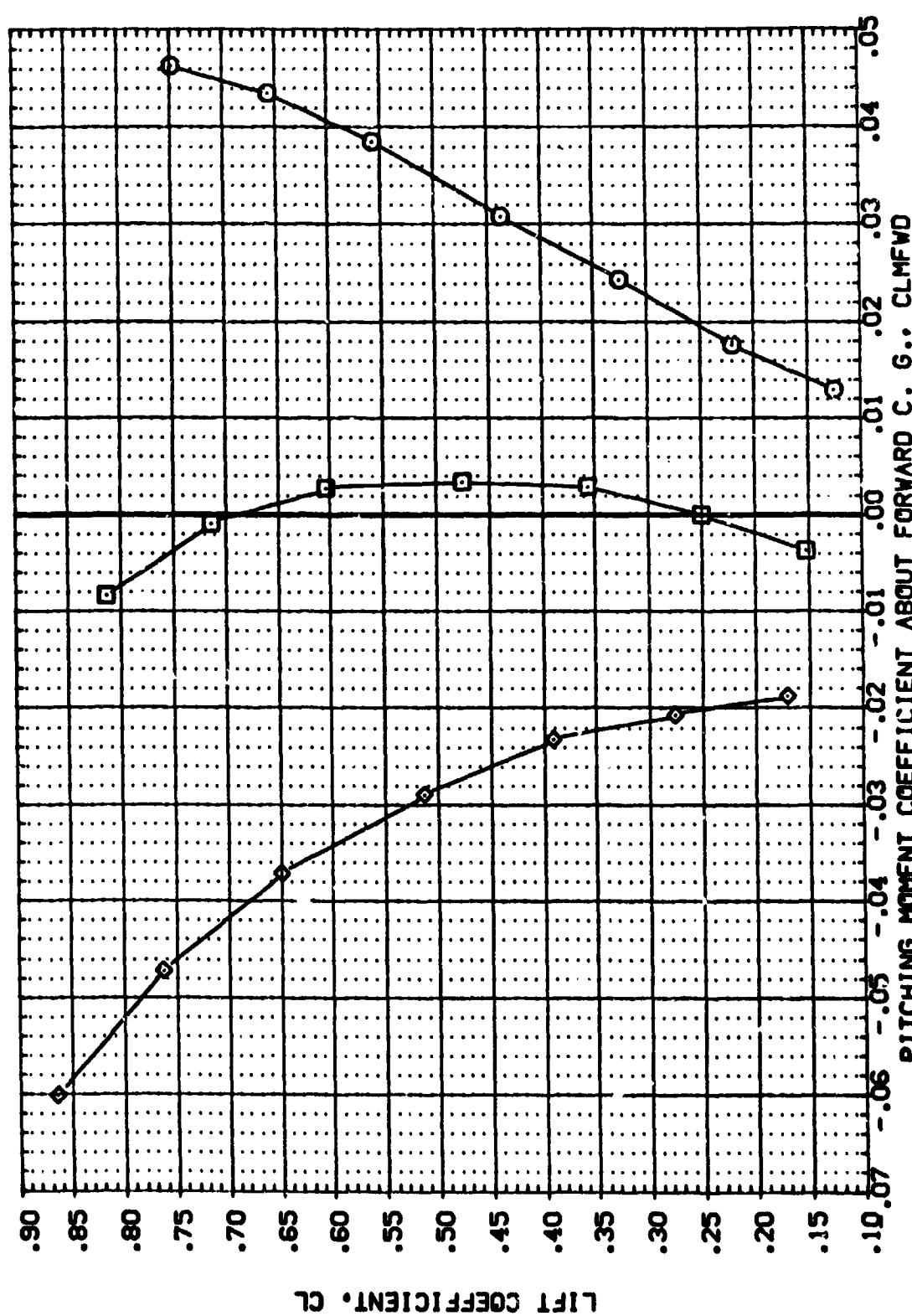


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., δ FLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		REFERENCE INFORMATION	
(857017)	AVES 3.5-176	0467	140 A/B CRBITER	SNCF	2880.0000
(857016)	AVES 3.5-176	0467	140 A/B CRBITER	LNCF	1250.0000
(857018)	AVES 3.5-176	0467	140 A/B CRBITER	BRCF	536.6800
				XRCP	1076.4800
				YRCP	375.0000
				ZRCP	375.0000
				SCALE	.0150

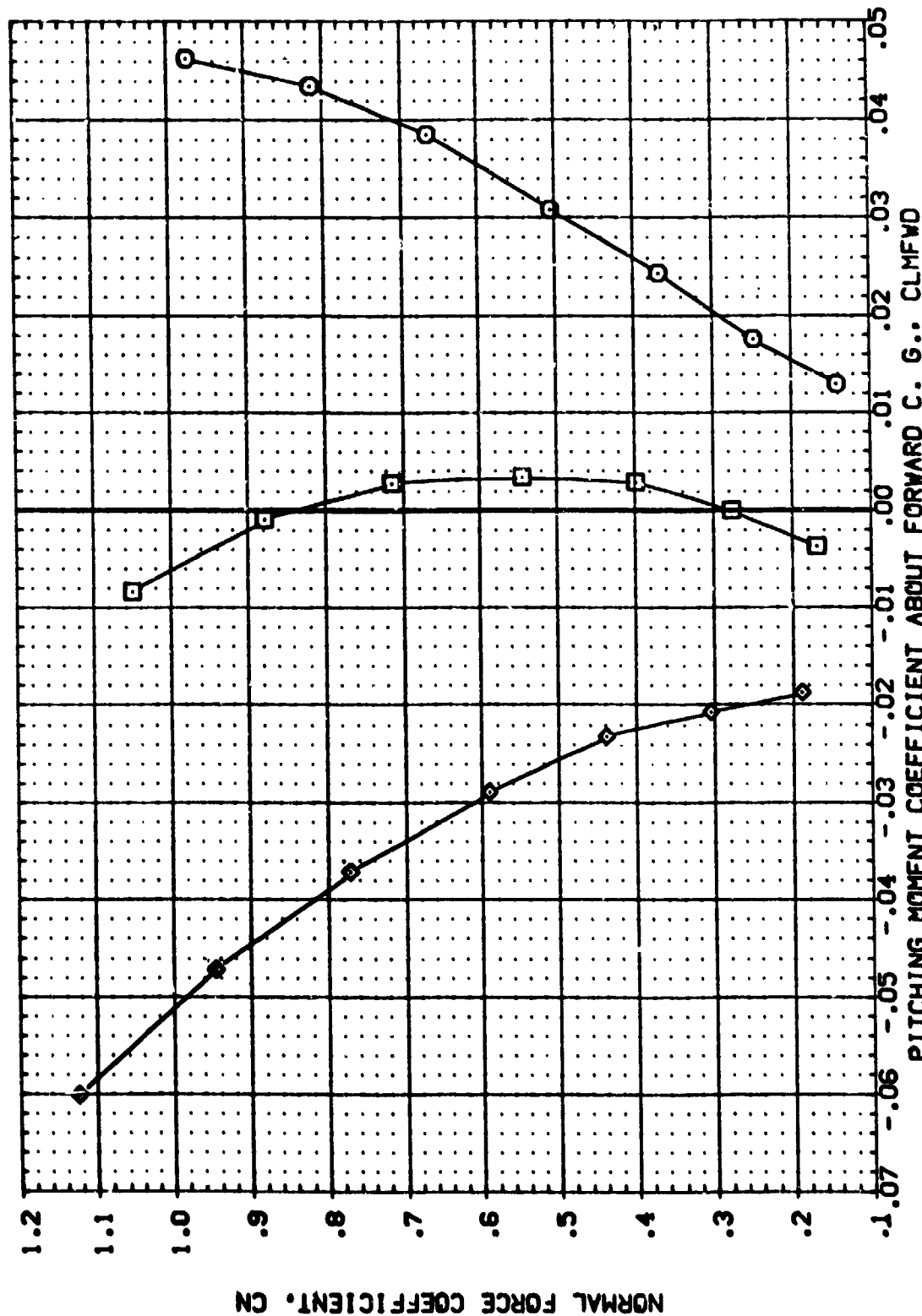


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	BDPLAP	RN/L	REFERENCE INFORMATION
(BEF017)	AVES 3.5-176 OAG7 140 A/B ORBITER	-40.000	55.000	-11.700	10.000	SREF 2650.0000 SQ.FT.
(BEF016)	AVES 3.5-176 OAG7 140 A/B ORBITER	0.000	55.000	-11.700	10.000	LREF 1250.3000 IN.
(BEF018)	AVES 3.5-176 OAG7 140 A/B ORBITER	10.000	55.000	-11.700	10.000	PREF 536.5600 IN.
						APRP 1076.4800 IN.
						TPRP 375.0000 IN.
						ZWRP 0.0150 SCALE

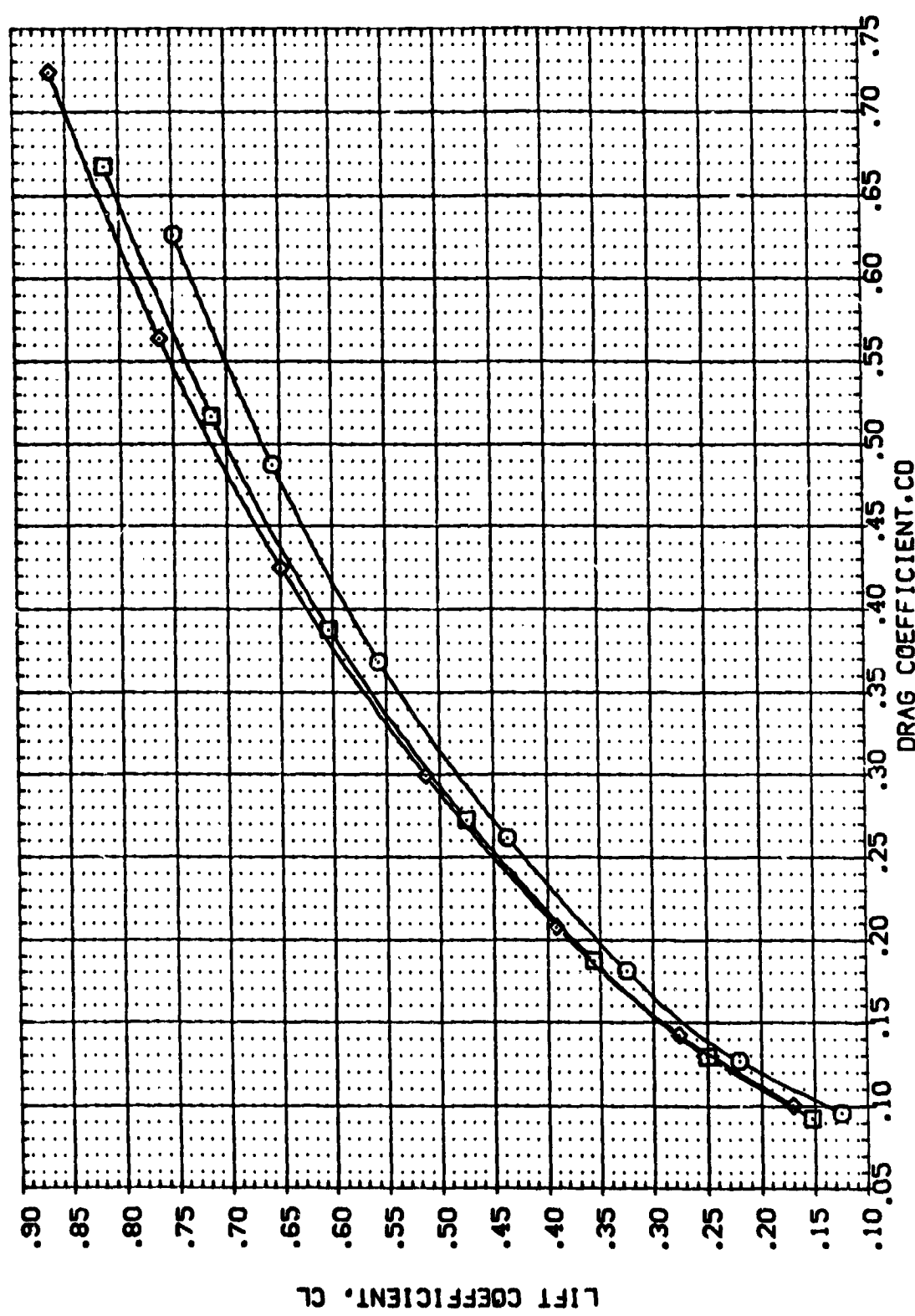


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDPLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BOFLAP	RN/L	REFERENCE INFORMATION
(AEF017)	AVES 3.5-176 OAB7 140 A/B OAB7ITER	-40.000	55.000	-11.700	10.000	SREF 2690.0000 SQ.FT.
(AEF016)	AVES 3.5-176 OAB7 140 A/B OAB7ITER	.000	55.000	-11.700	10.000	LREF 1290.3000 IN.
(AEF018)	AVES 3.5-176 OAB7 140 A/B OAB7ITER	10.000	55.000	-11.700	10.000	BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

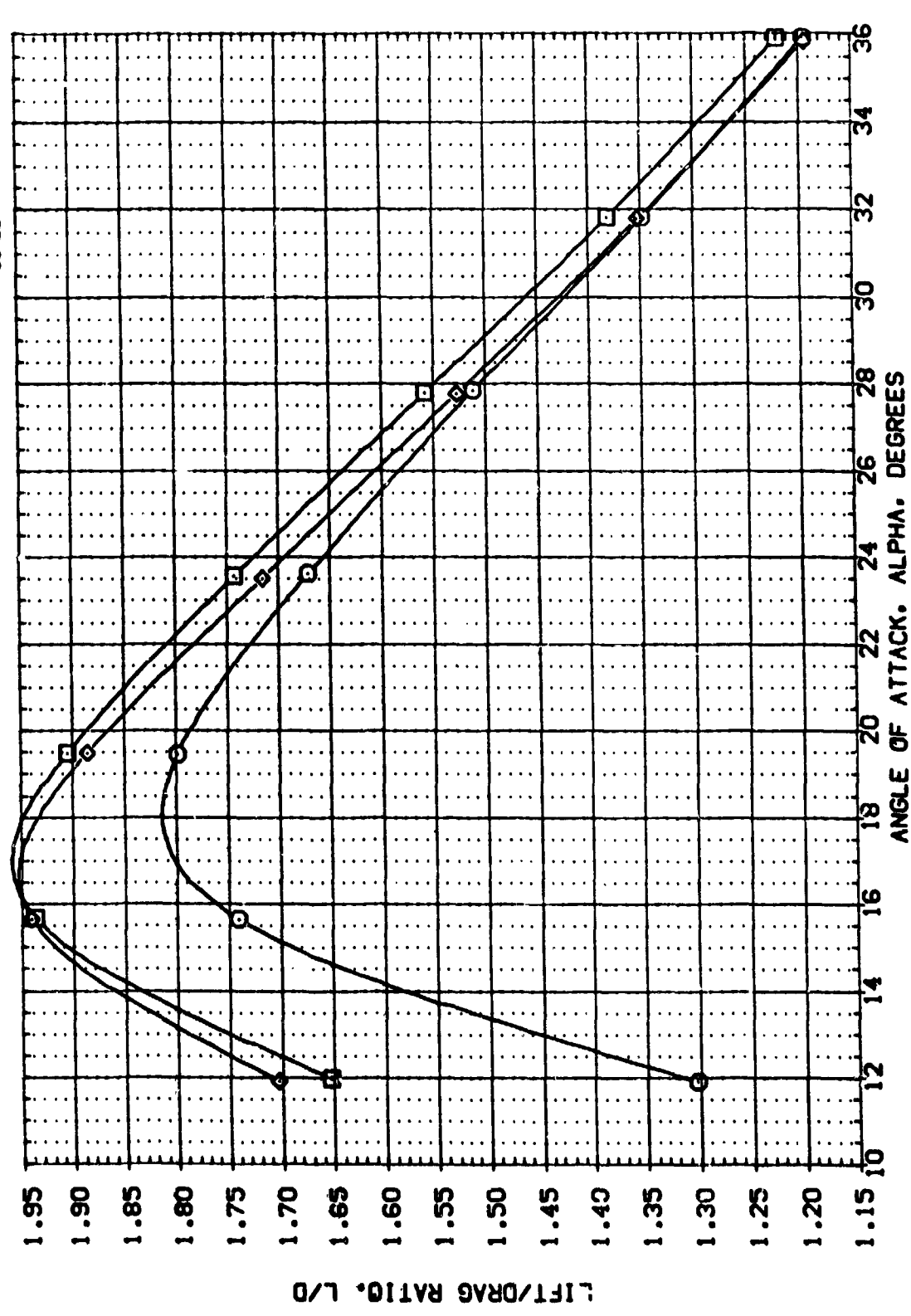


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPDRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EFO17)	AMES 3.5-176 QAB7 140 A/B ORBITER	-40.000	55.000	-11.700	10.000	SREF 2630.0000 SO.FT.
(EFO18)	AMES 3.5-176 QAB7 140 A/B ORBITER	10.000	55.000	-11.700	10.000	LREF 1230.3000 IN.
						BREF 536.6500 IN.
						YREF 1076.4800 IN.
						ZREF 375.0000 IN.
						SCALE .0150

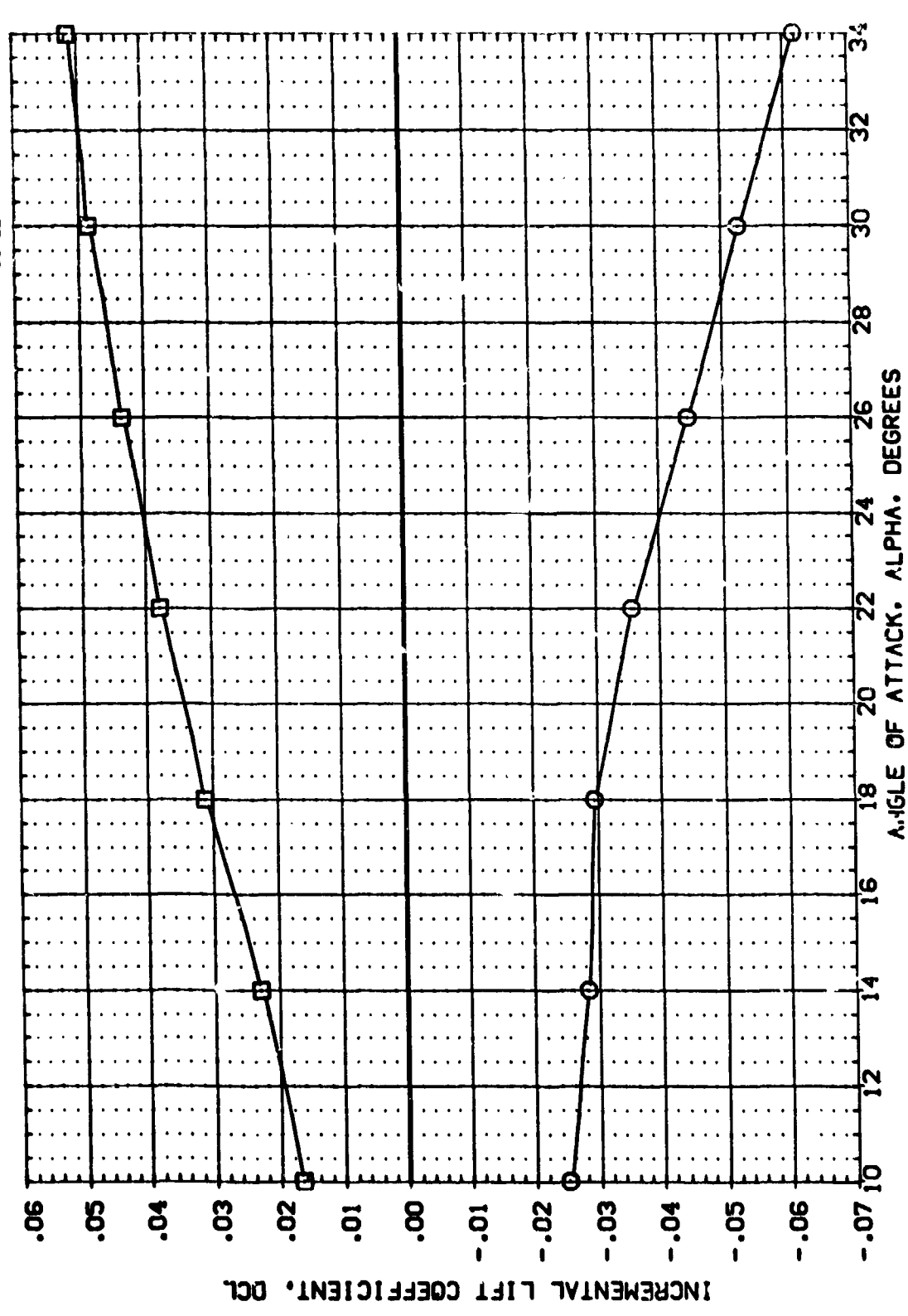


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		REFERENCE INFORMATION	
(EEF017)	□	ANES 3.5-176	0A87 140 A/B ORBITER	SREF	2690.0000 SQ.FT.
(EEF018)	□	ANES 3.5-176	0A87 140 A/B ORBITER	LREF	1290.3000 IN.
				BREF	936.6800 IN.
				XMRP	1076.4800 IN.
				YMRP	.0000 IN.
				ZMRP	375.0000 IN.
				SCALE	.0150

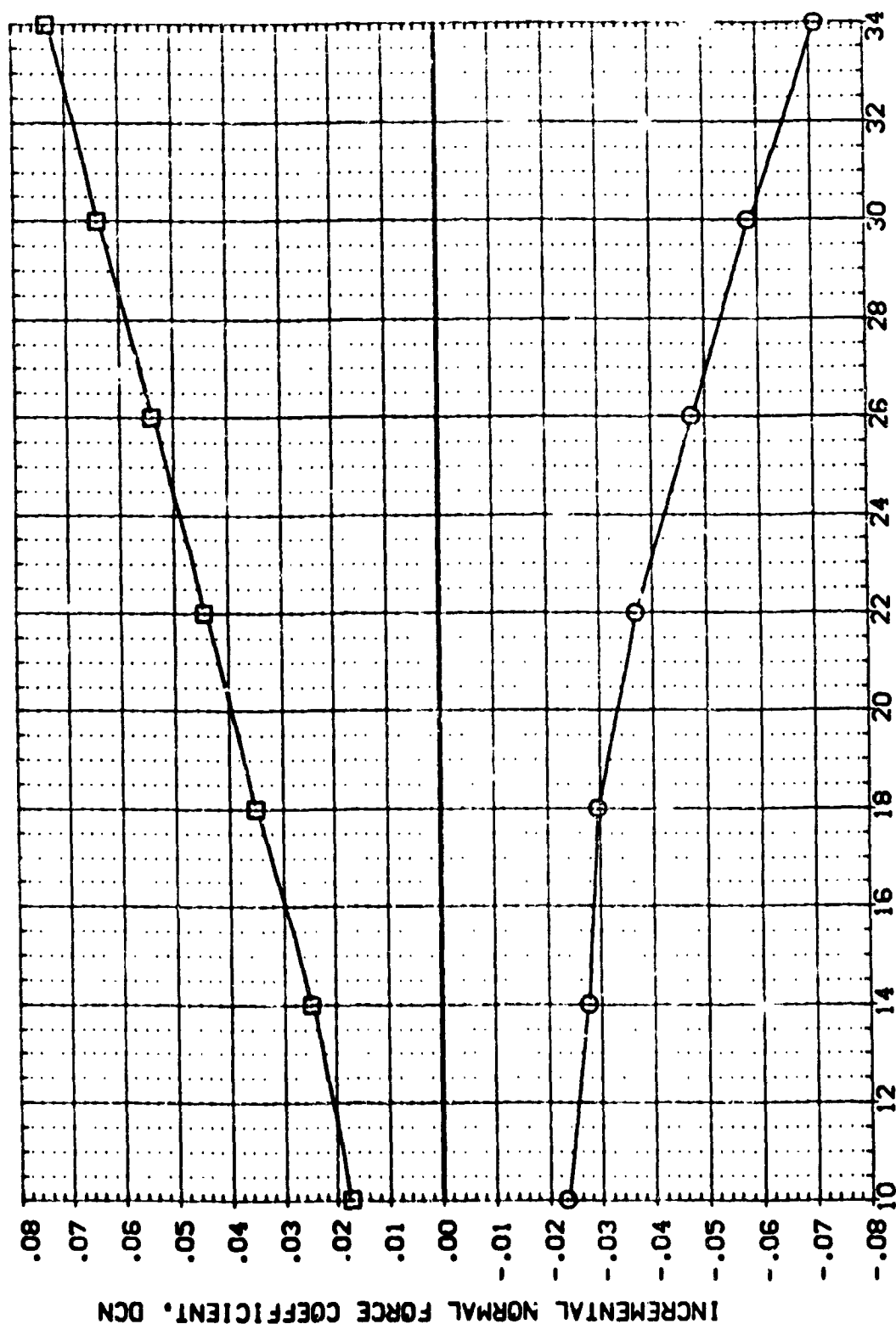
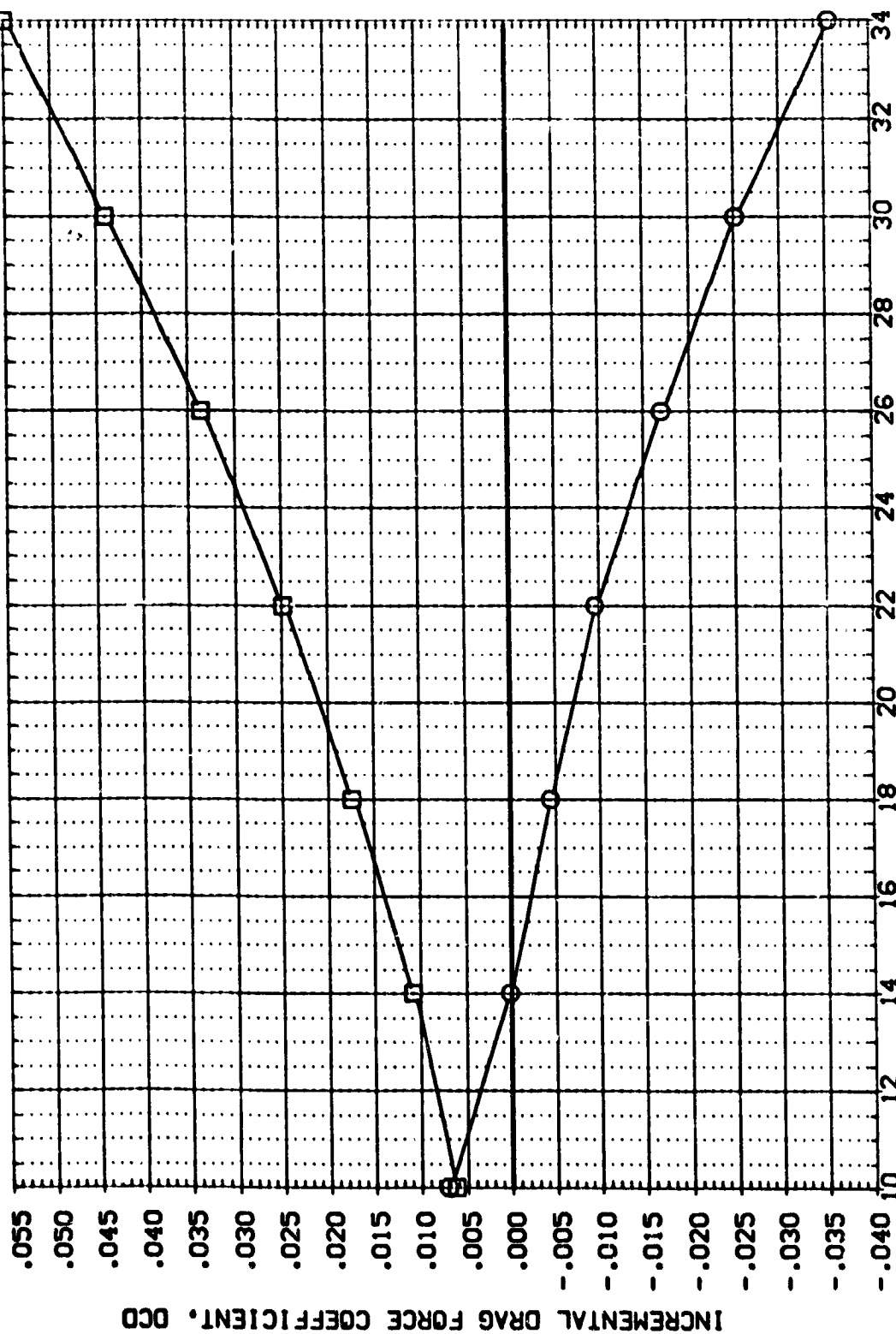


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBK	BDLAP	RN/L	REFERENCE INFORMATION
(EFO17)	AVES 3.5-176 OAB7 140 A/B OABITER	-40.000	55.000	-11.700	10.000	SREF 2650.0000 50.FT.
(EFO18)	AVES 3.5-176 OAB7 140 A/B OABITER	10.000	55.000	-11.700	10.000	LREF 1250.3000 IN.
						BREF 936.6800 IN.
						XTRP 1076.4800 IN.
						YTRP 0000 IN.
						ZTRP 375.0000 IN.
						SCALE .0150

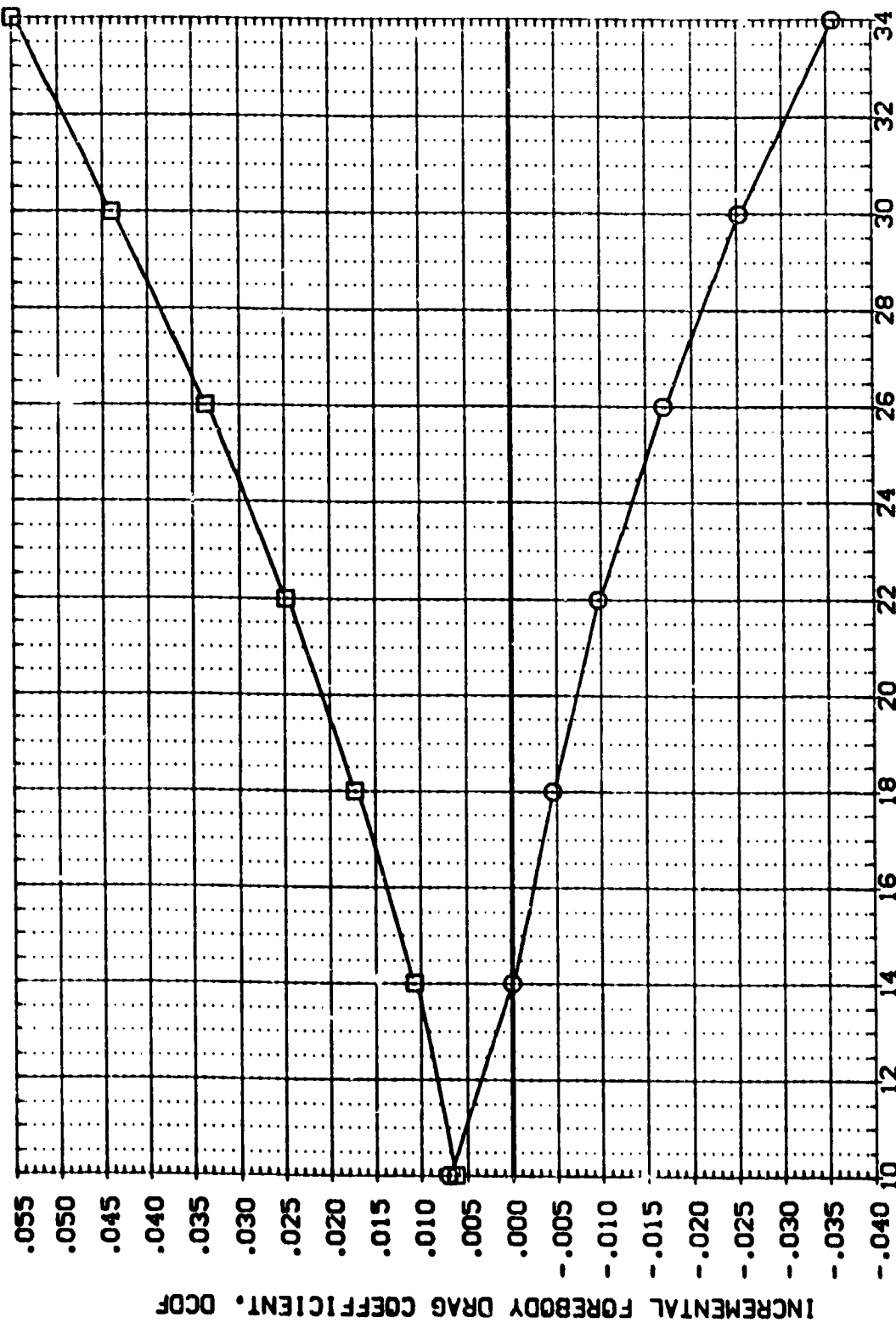


ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPDRK	BOFLAP	RN/L	REFERENCE INFORMATION
(EFO17)	WES 3.5-176 CAS7 140 A/B ORBITER	-40.000	55.000	-11.700	10.000	SREF 2650.0000 50.FT.
(EFO18)	WES 3.5-176 CAS7 140 A/B ORBITER	10.000	55.000	-11.700	10.000	LREF 1290.3000 IN.
						BREF 936.6800 IN.
						XTRP 1076.4800 IN.
						YTRP 375.0000 IN.
						ZTRP .0150 SCALE



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPDRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EEF017)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	53.000	-11.700	10.000	SREF 2690.0000 SQ.FT.
(EEF018)	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	53.000	-11.700	10.000	LREF 750.3000 IN.
						BREF 938.6800 IN.
						YMRP 1076.4800 IN.
						ZMRP .0000 IN.
						SCALE 375.0000 IN.
						SCALE .0150

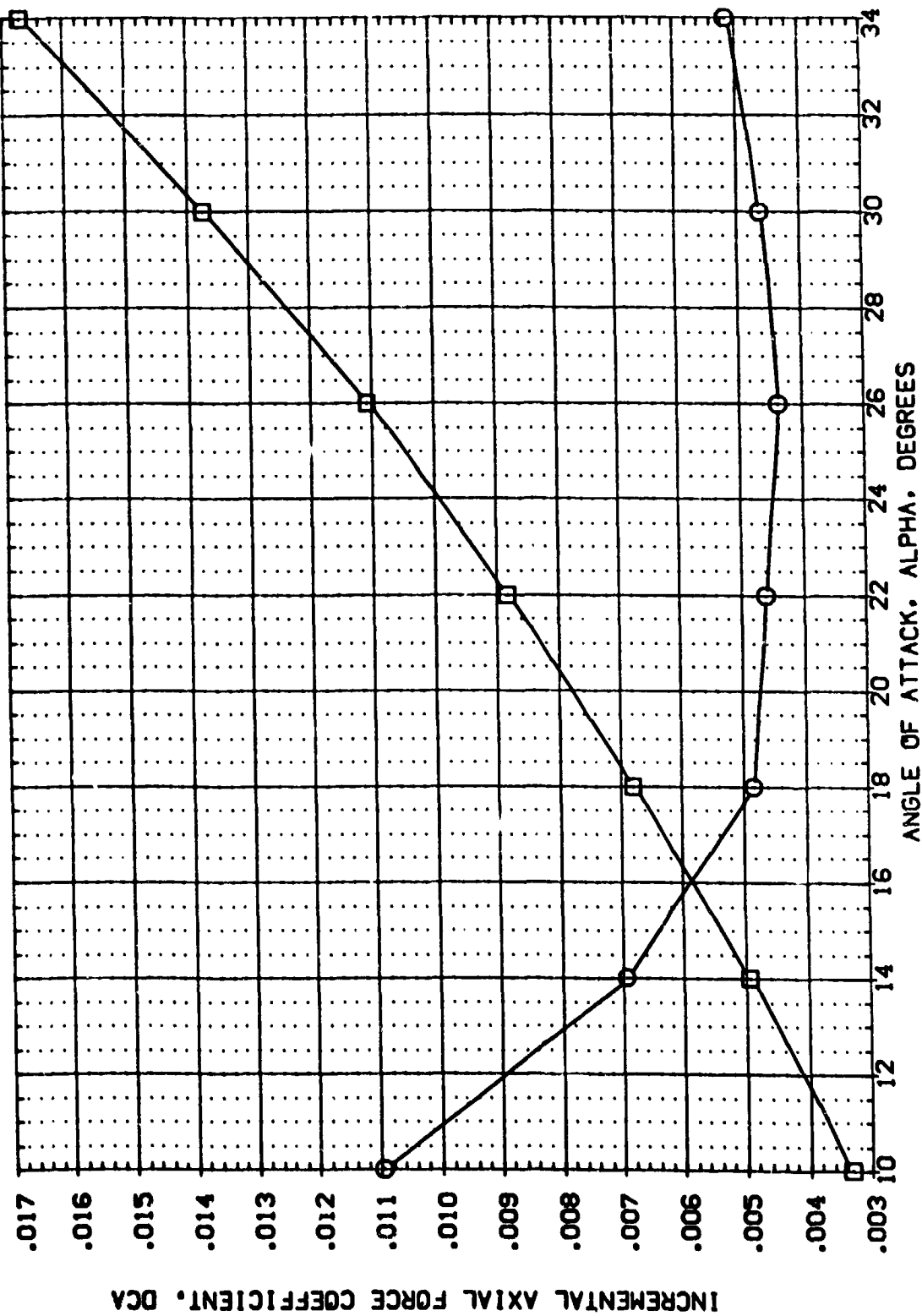


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		REFERENCE INFORMATION	
(EFO17)	□	AVES 3.5-176	QAG7 140 A/B ORBITER	SREF	2690.0000 SQ. FT.
(EFO16)	□	AVES 3.5-176	QAG7 140 A/B ORBITER	LREF	1750.3000 IN.
				BREF	536.6800 IN.
				XPRP	1076.4800 IN.
				YPRP	.0000 IN.
				ZPRP	375.0000 IN.
				SCALE	.0150 SCALE

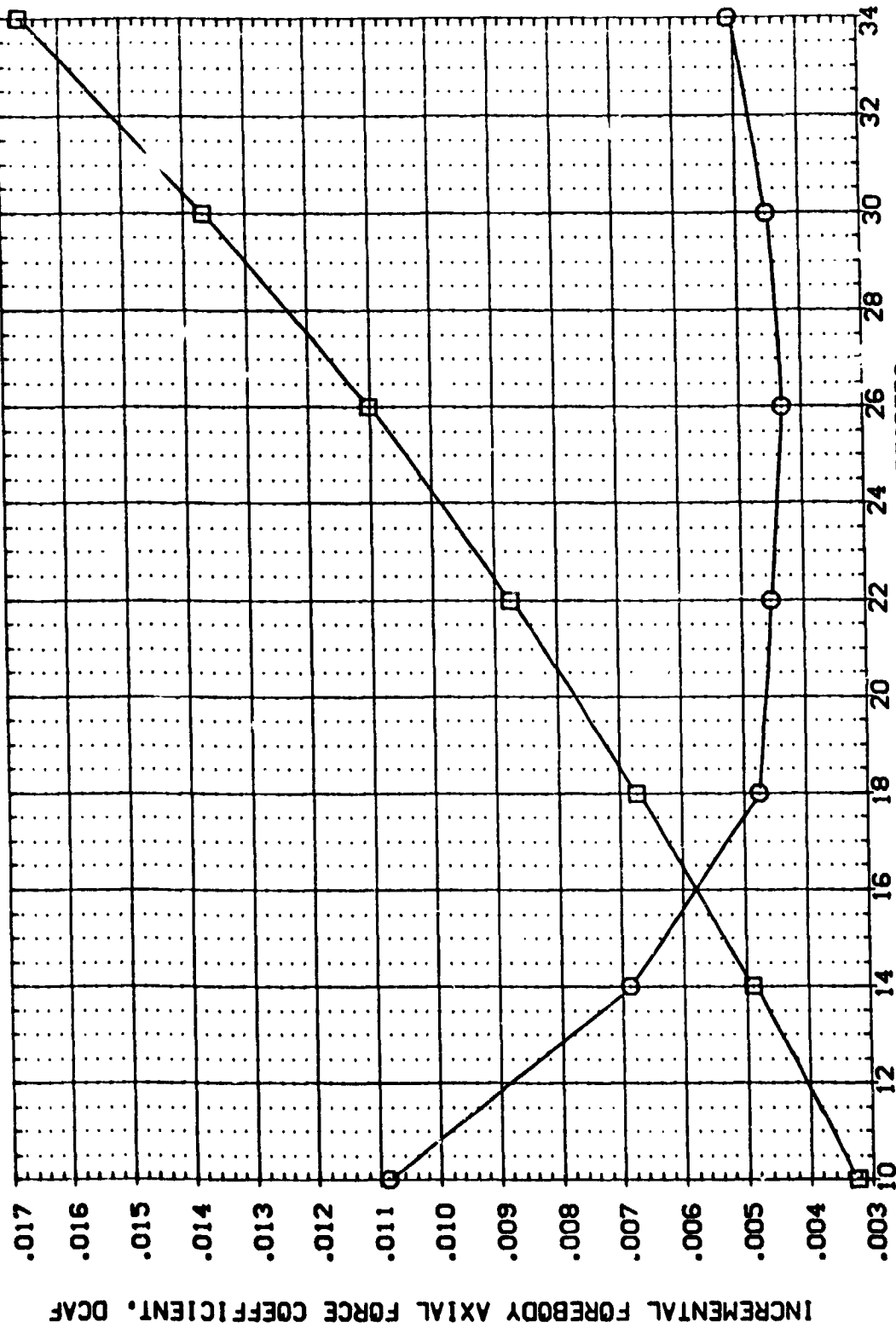


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPDRK	BOFLAP	RN/L	REFERENCE INFORMATION
(EEF017)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	-11.700	10.000	SREF 2650.0000 SQ.FT.
(EEF018)	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	-11.700	10.000	LREF 1250.3000 IN.
						BREF 536.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

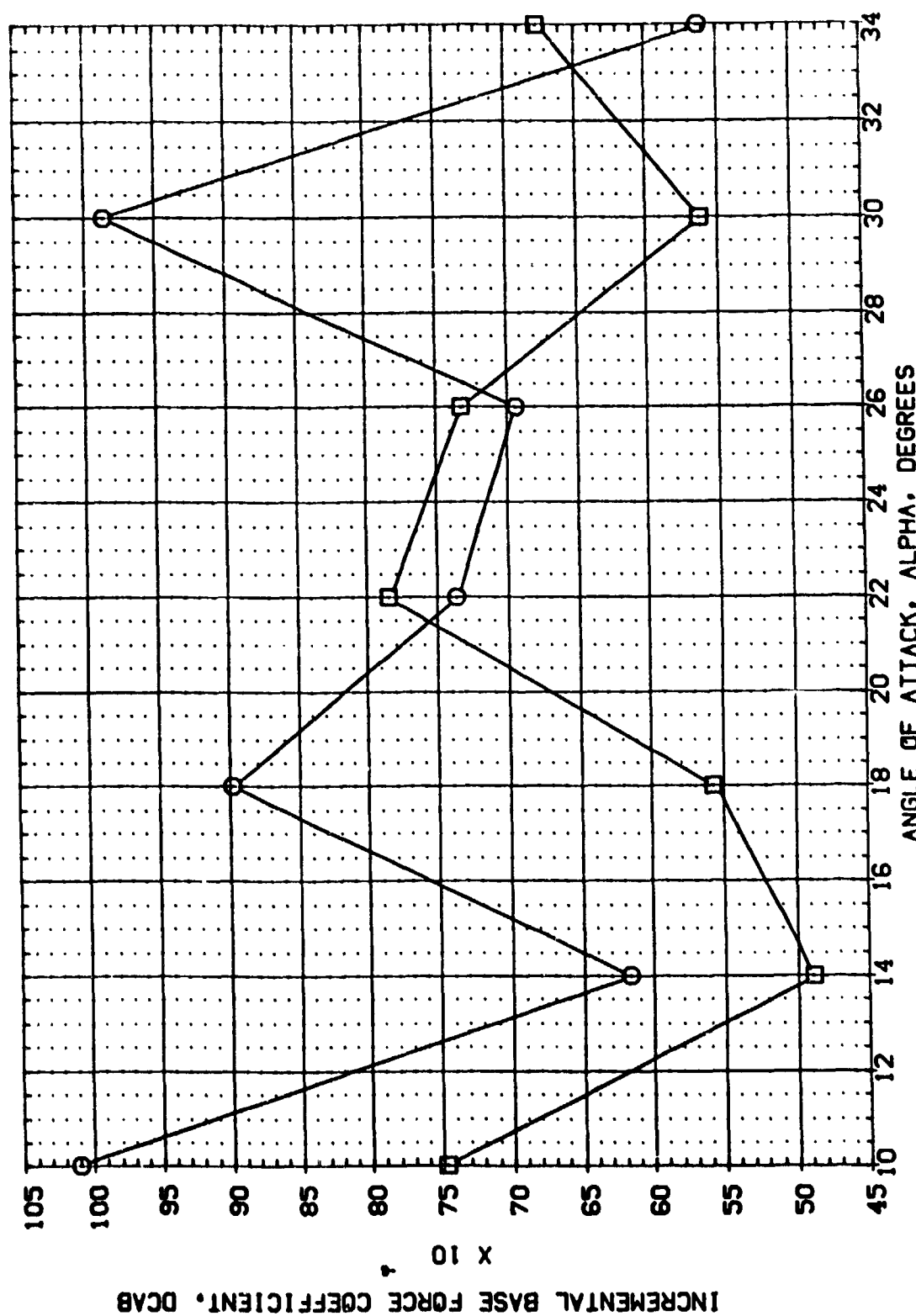


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(EEF017)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	-11.700	10.000	SREF 2690.0000 SQ.FT.
(EEF018)	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	-11.700	10.000	LREF 1290.3000 IN.
						BREF 936.6800 IN.
						XREF 1076.4800 IN.
						YREF 375.0000 IN.
						ZREF 0.0150 IN.
						SCALE

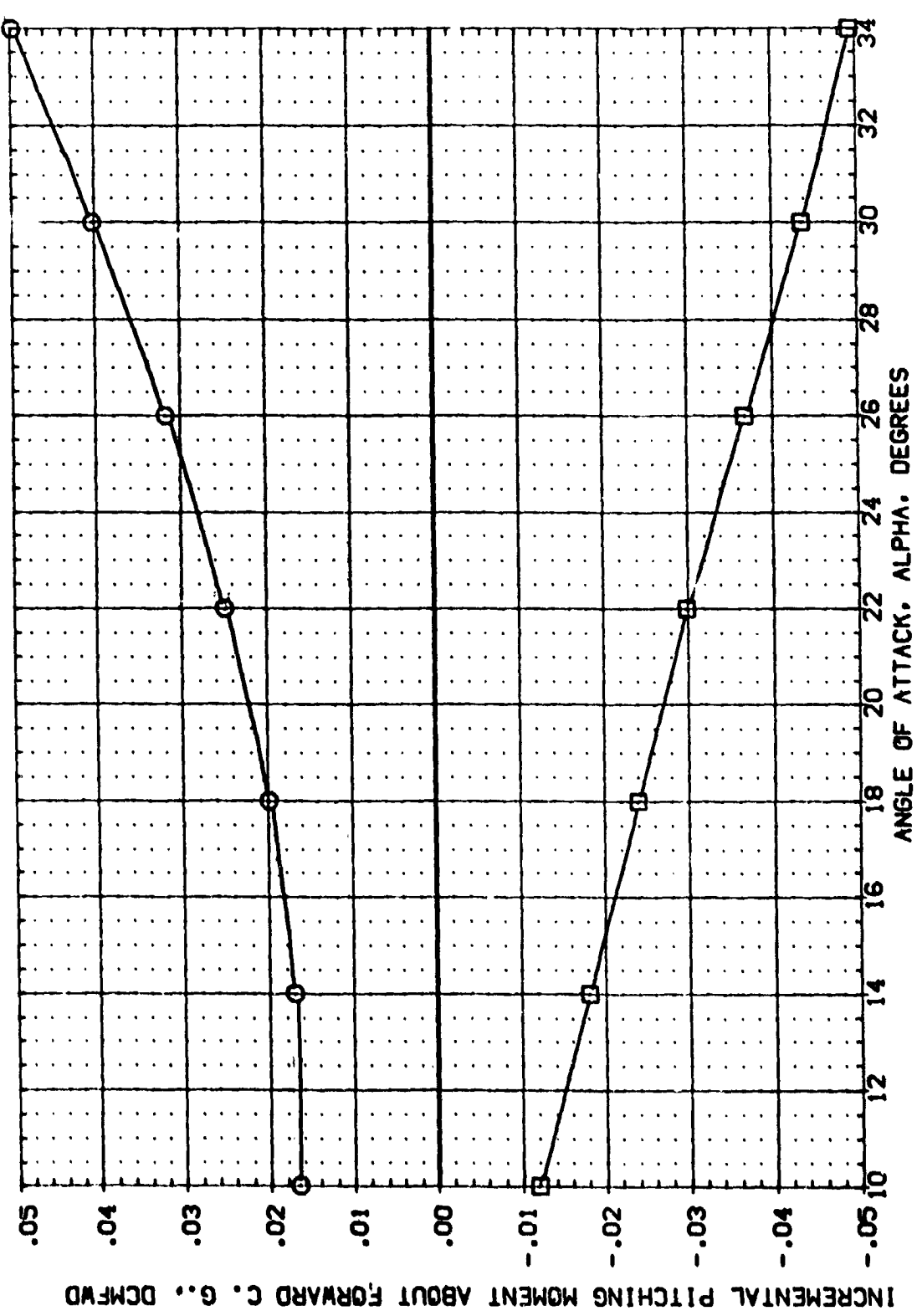


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(EFO17)	AVES 3.5-176 CAB7 140 A/B ORBITER	-10.000	55.000	-11.700	10.000	SREF 2690.0000 50.FT.
(EFO18)	AVES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	-11.700	10.000	LREF 1250.3000 IN.
						BREF 936.6800 IN.
						XPRP 1076.4800 IN.
						YPRP .0000 IN.
						ZPRP 375.0000 IN.
						SCALE .0150

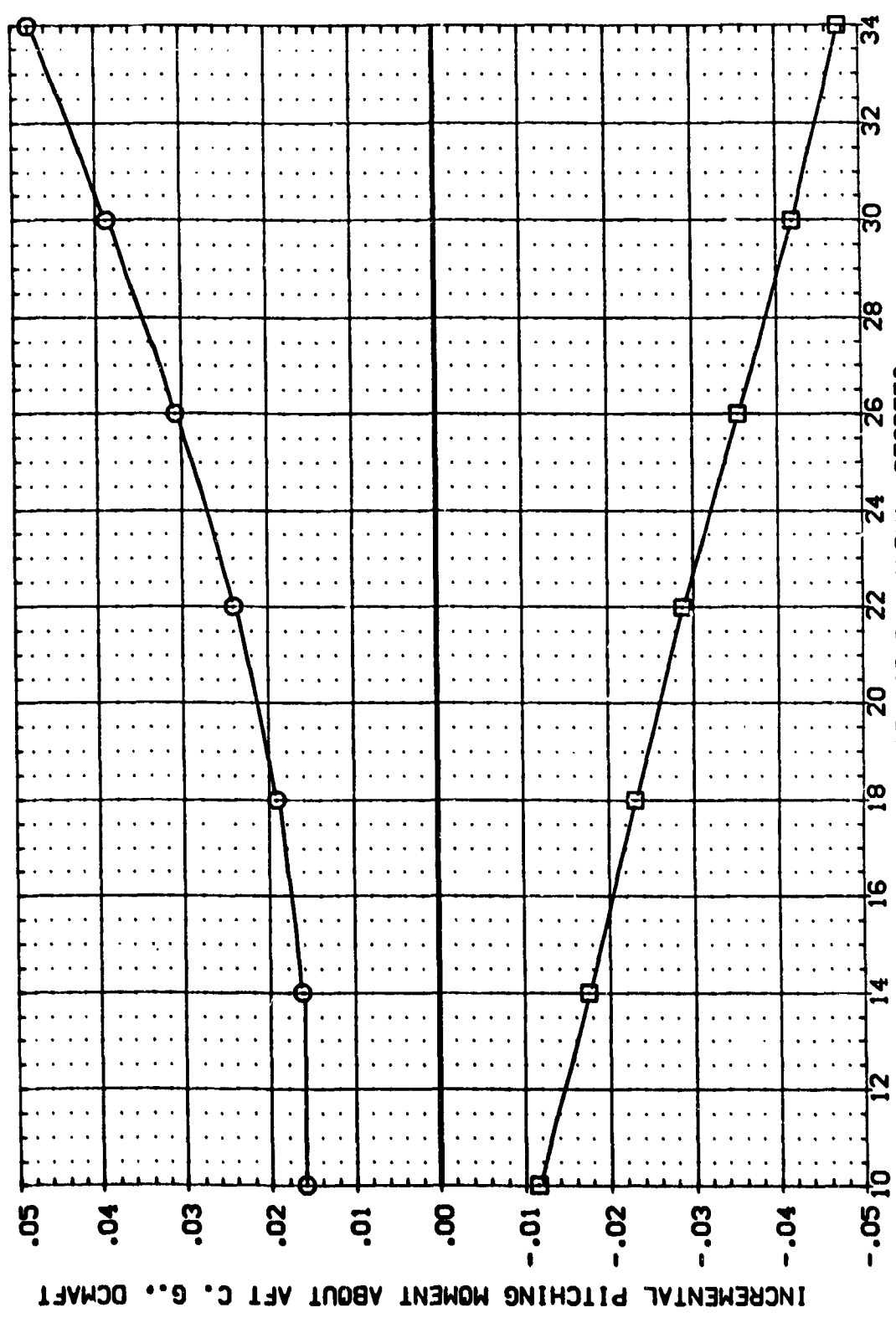
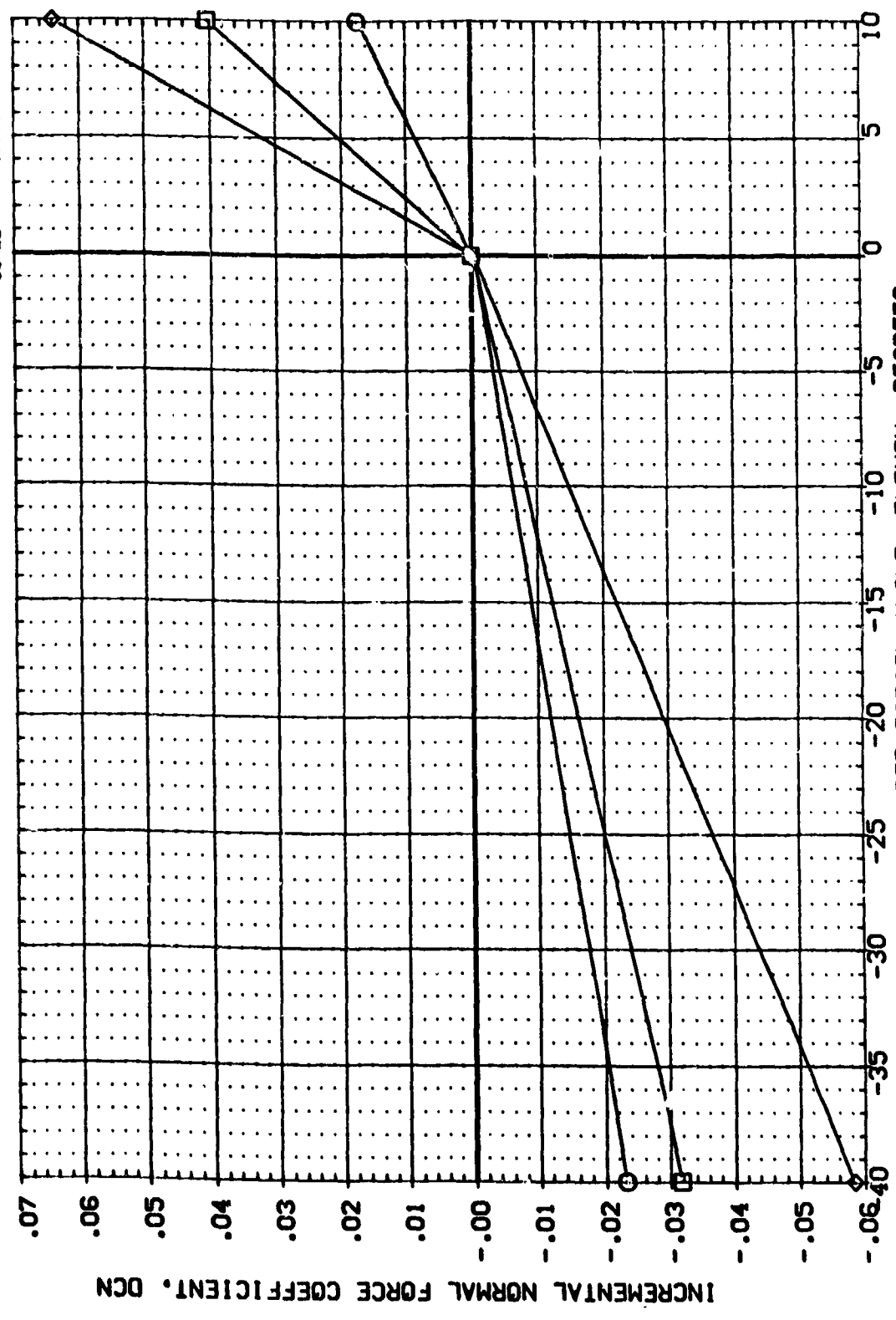


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

(A)MACH = 7.32

AMES 3.5-176 0A87 140 A/B ORBITER (FEF017)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	DATASET	ELEVON	SREF	REFERENCE INFORMATION
○	10.000		7.320 BETA	.000 DATASET	FEF017	.000	2690.0000	2690.0000 SQ.FT.
□	20.000	ALLRON	.000 BOFLAP	-11.700 FEF017	FEF016	.000	1290.3000	1290.3000 IN.
◇	30.000	RUDER	.000 SPOBRK	55.000 FEF016			936.6800	936.6800 IN.
		RN/L	10.000				1076.4800	1076.4800 IN.
							375.0000	375.0000 IN.
							SCALE	SCALE
								.0150



ELEVON DEFLECTION ANGLE, ELEVON, DEGREES

FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

AMES 3.5-176 0A87 140 A/B ORBITER (FEF017)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	ELEVON	DATASET	ELEVON	SREF	REFERENCE INFORMATION
○	10.000		BETA	.000	FEF017		.000	2690.0000	50. FT.
□	20.000	AILRON	BDFLAP	-11.700	FEF018		.000	1290.3000	IN.
◇	30.000	RUDER	SPOBRK	55.000	FEF018		.000	936.6800	IN.
		RVL		10.000			.000	1076.4800	IN.
							.000	375.0000	IN.
							.0150	SCALE	SCALE

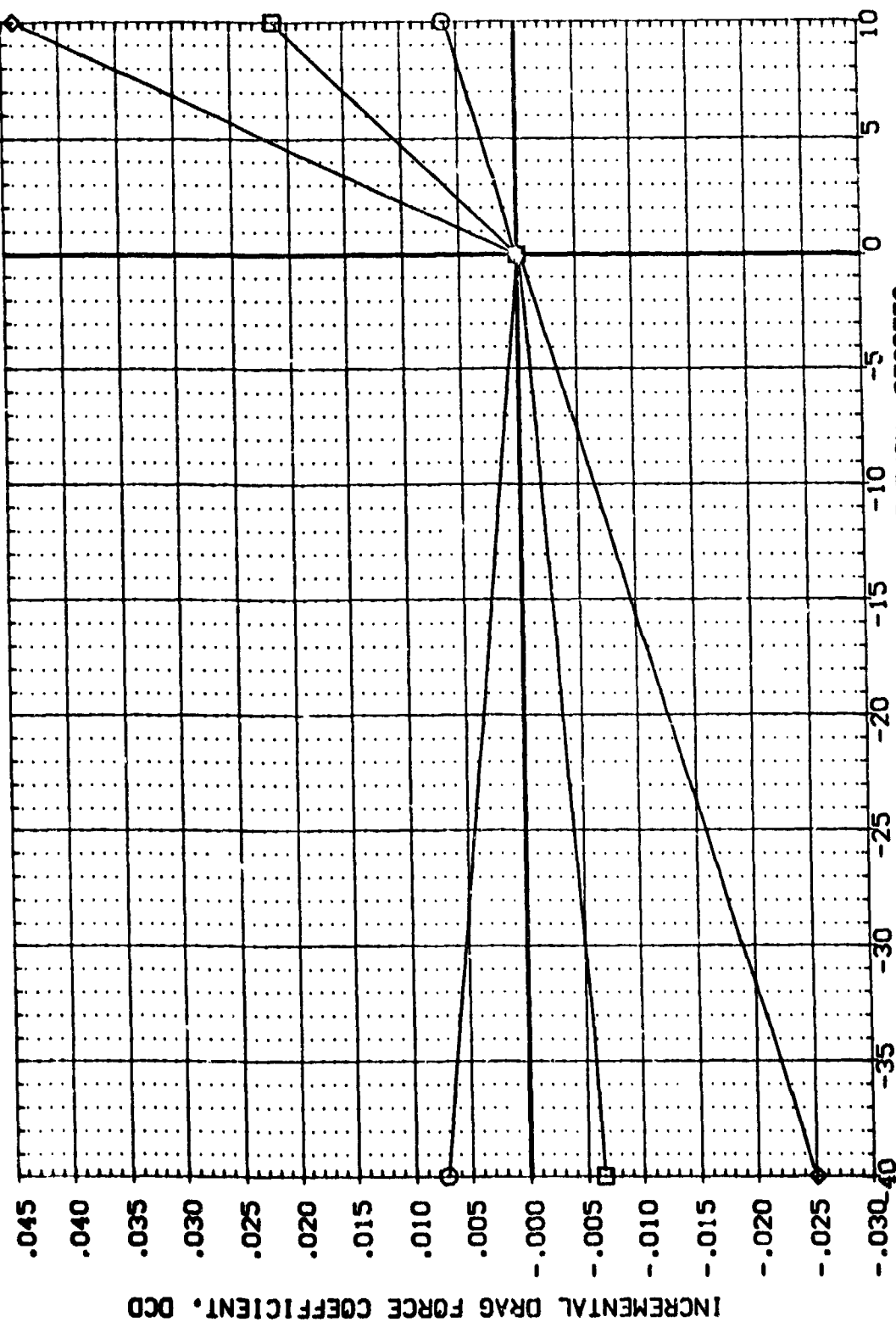
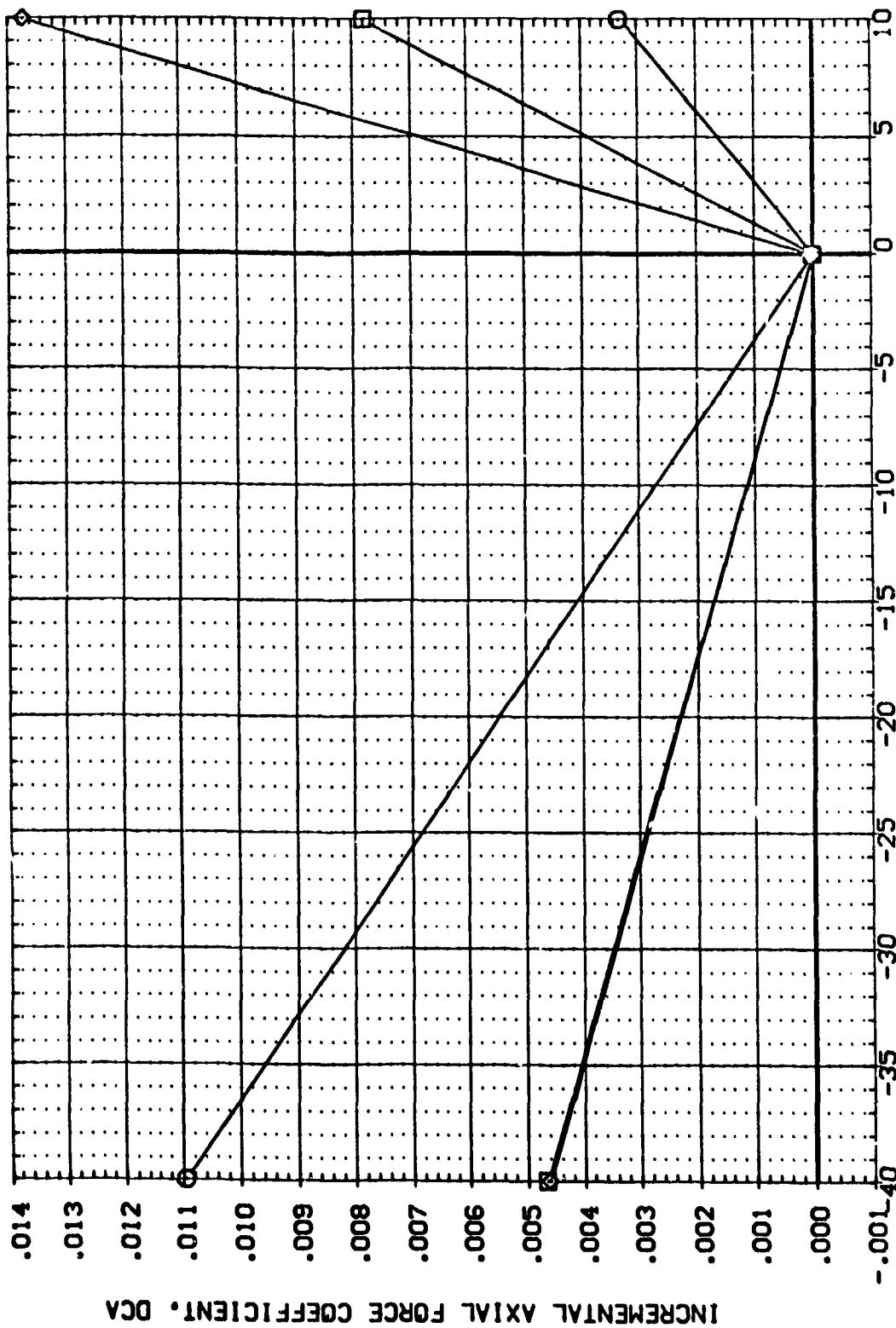


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7

AMES 3.5-176 0A87 140 A/B ORBITER (FEF017)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	ELEVON	FEF016	FEF017	FEF018	REFERENCE INFORMATION
○	10.000	7.320	BETA	.000	.000	.000	.000	.000	SREF 2690.0000
□	20.000	.000	BDFLAP	-11.700	-40.000	FEF016	FEF017	FEF018	LREF 1290.3000
◇	30.000	.000	SPOBRK	55.000	10.000	FEF016	FEF017	FEF018	BREF 936.6800
		10.000							XREF 1076.4800
									YREF .0000
									ZREF .0000
									SCALE .0150



ELEVON DEFLECTION ANGLE, ELEVON, DEGREES

FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7

AMES 3.5-176 0A87 140 A/B ORBITER (FEF017)

PARAMETRIC VALUES			DATA SOURCE		REFERENCE INFORMATION	
SYMBOL	ALPHA	MACH	BETA	BOFLAP	SPOBRK	SCALE
○	10.000	7.320	.000	FEF017	FEF018	2690.0000
□	20.000	.000	BOFLAP	-11.700	FEF017	1290.3000
◇	30.000	RUDDER	10.000	55.000	FEF018	936.6800
		RN/L				1076.4800
						375.0000
						SCALE .0150

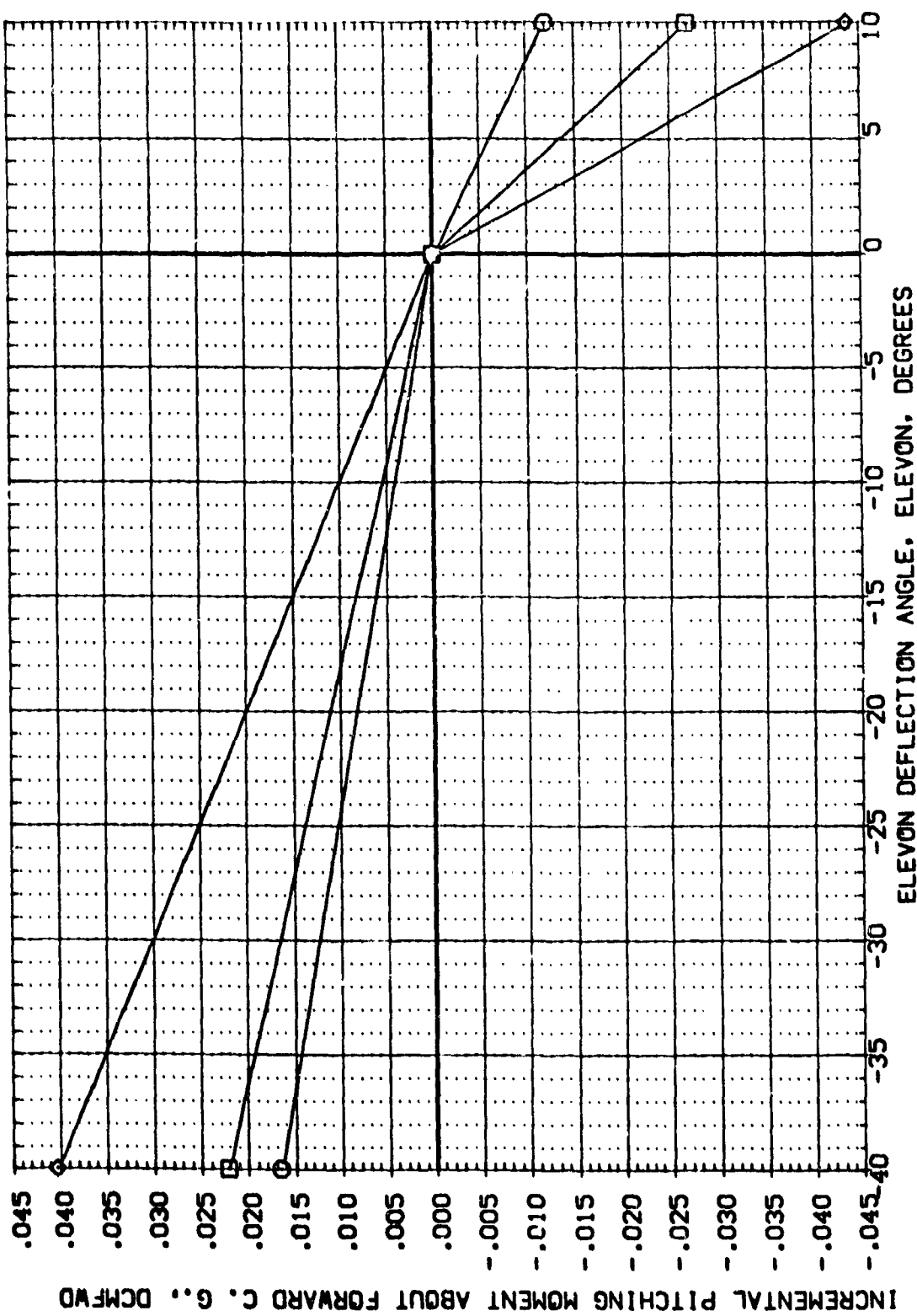
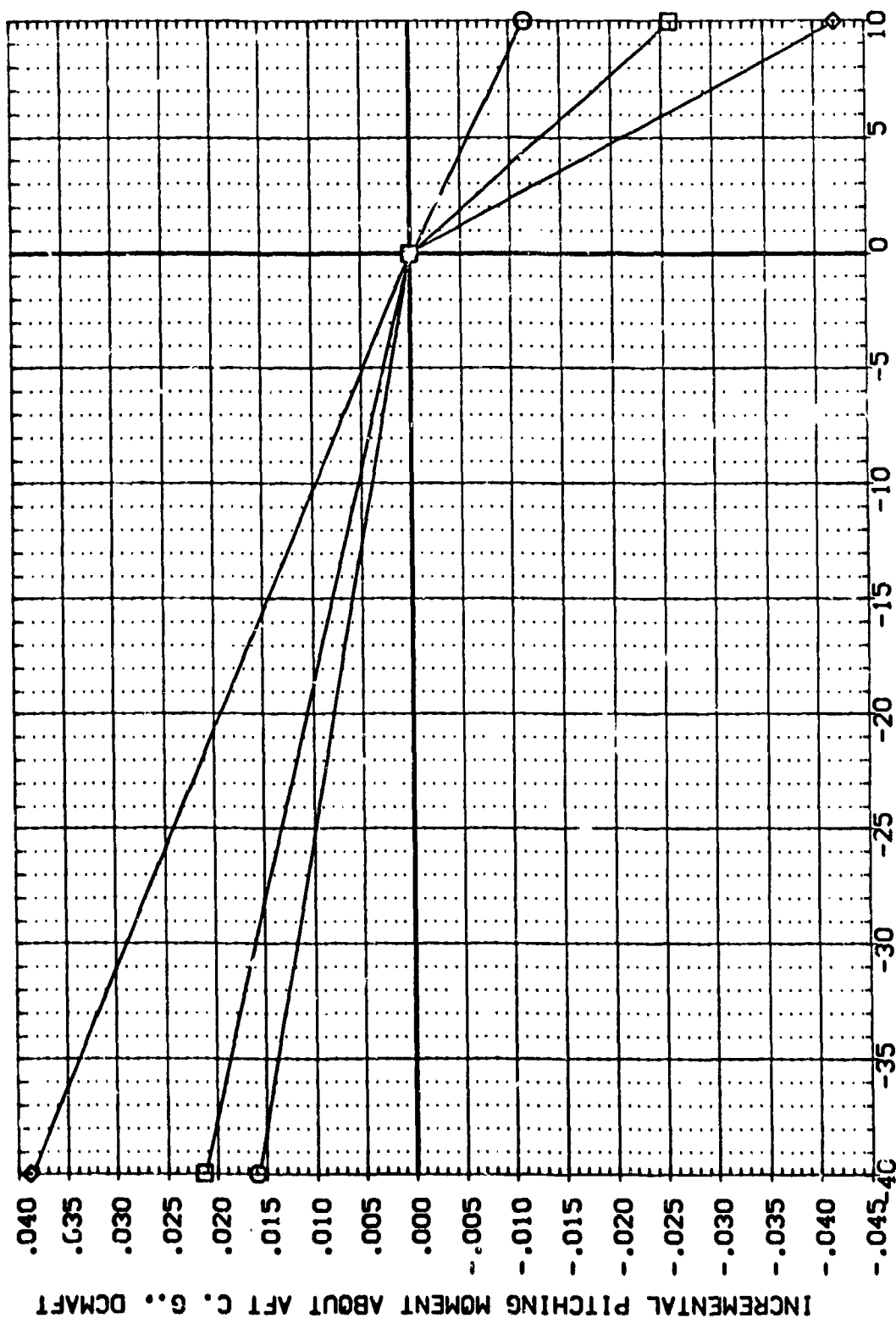


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7

(FEF017)

AMES 3.5-176 0A87 140 A/B ORBITER

SYMBOL		ALPHA		MACH		PARAMETRIC VALUES		DATA SOURCE		ELEVON		DATASET		ELEVON		SREF		REFERENCE INFORMATION	
○	□	◇	10.000	20.000	30.000	7.320	BETA	.000	FEF017	-40.000	.000	FEF016	.000	2690.0000	IN.	2690.0000	IN.	2690.0000	IN.
						.000	BOFLAP	-11.700	FEF017	10.000				1290.3070	IN.	1290.3070	IN.	1290.3070	IN.
						.000	SPOERK	55.000	FEF018					936.6800	IN.	936.6800	IN.	936.6800	IN.
						10.000								1076.4800	IN.	1076.4800	IN.	1076.4800	IN.
														375.0000	IN.	375.0000	IN.	375.0000	IN.
														SCALE	SCALE	SCALE	SCALE	SCALE	SCALE



ELEVON DEFLECTION ANGLE, ELEVON, DEGREES

FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPODBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFOOS)	AVES 3.5-176 0A87 140 A/B 0881TER	-40.000	55.000	.000	3.000	SREF 2690.0000 50. FT.
(BEFOO7)	AVES 3.5-176 0A87 140 A/B 0881TER	.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEFOO6)	AVES 3.5-176 0A87 140 A/B 0881TER	10.000	55.000	.000	3.000	BREF 936.5800 IN.
						XPRP 1076.4800 IN.
						YPRP .0000 IN.
						ZPRP .0000 IN.
						SCALE .0150

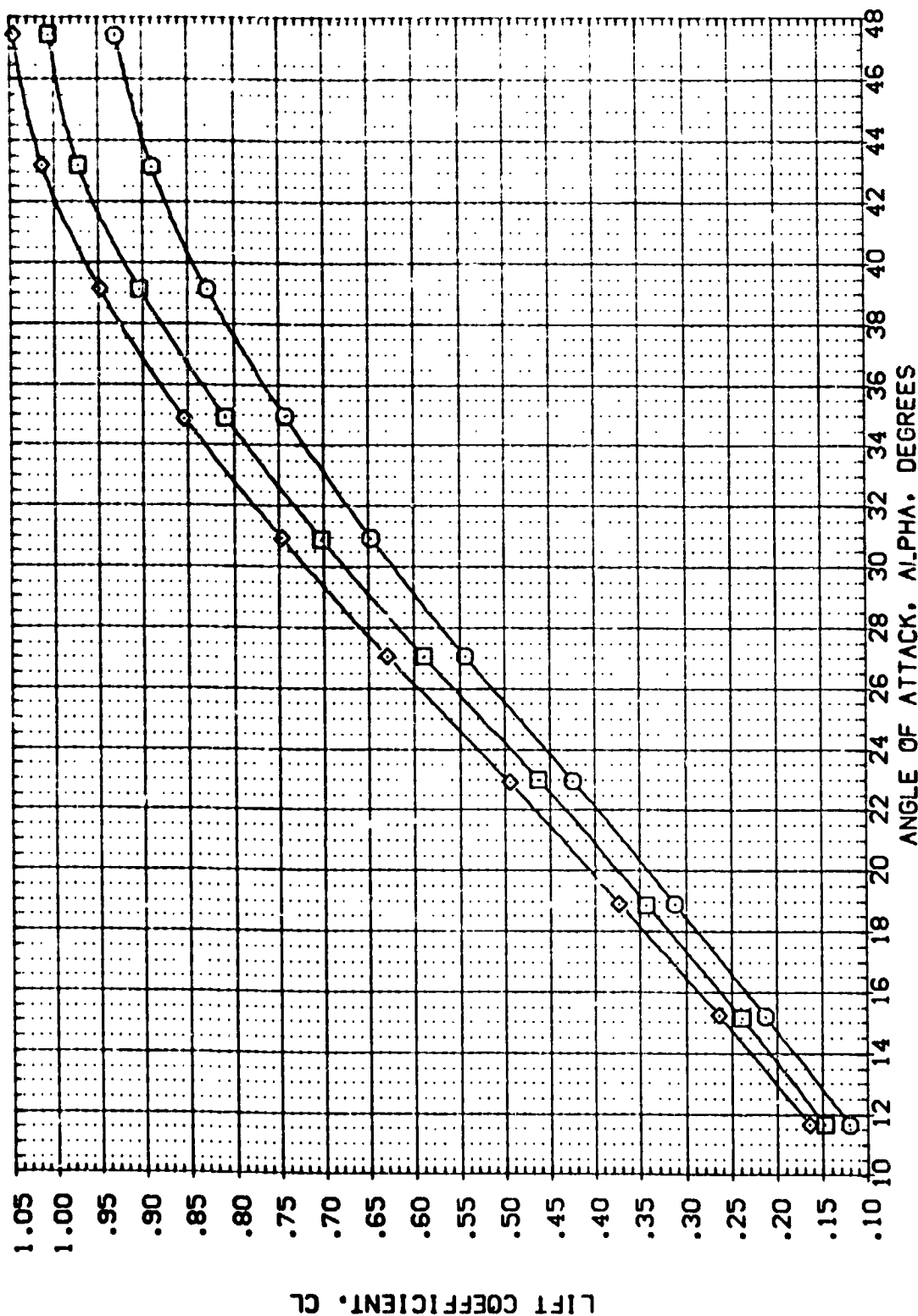


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF005)	AVES 3.5-176 CAB7 140 A/B CRBITER	-40.000	55.000	.000	3.000	SREF 2690.0000 SO.FT.
(BEF007)	AVES 3.5-176 CAB7 140 A/B CRBITER	.000	55.000	.000	3.000	LREF 1230.3000 IN.
(BEF008)	AVES 3.5-176 CAB7 140 A/B CRBITER	10.000	55.000	.000	3.000	BREF 936.6800 IN.
						XREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

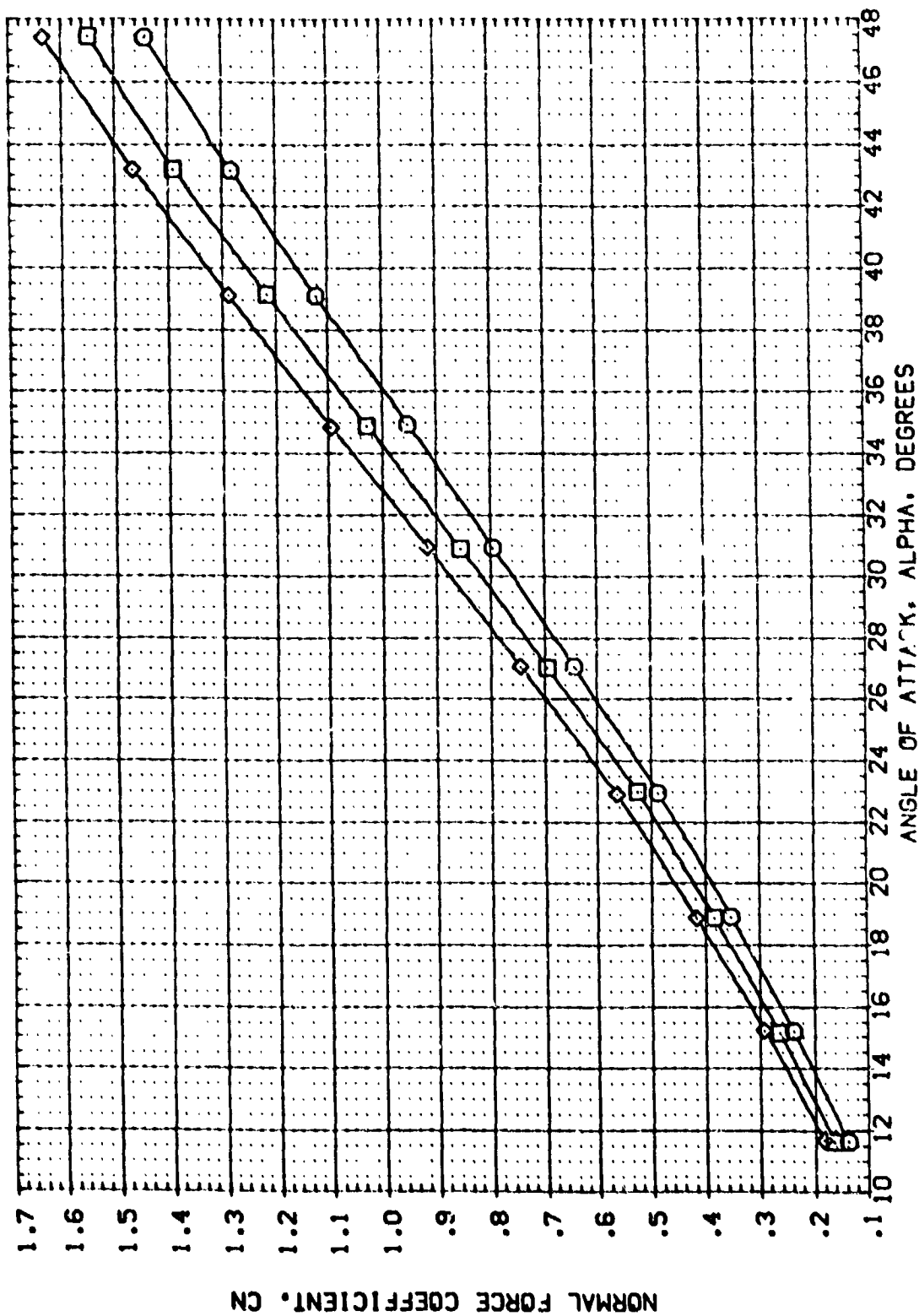


FIG. 7 ELEVON EFFECTIVENESS. RN/L=3.0, BOFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	S ² DBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF005)	APES 3.5-176 QAB7 140 A/B ORBITER	-40.000	55.000	.000	3.000	SREF 2690.0000 50. FT.
(BEF007)	APES 3.5-176 QAB7 140 A/B ORBITER	10.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEF006)	APES 3.5-176 QAB7 140 A/B ORBITER		55.000	.000	3.000	BREF 936.6800 IN.
						YARP 1076.4800 IN.
						YARP .0000 IN.
						ZARP 375.0000 IN.
						SCALE .0150

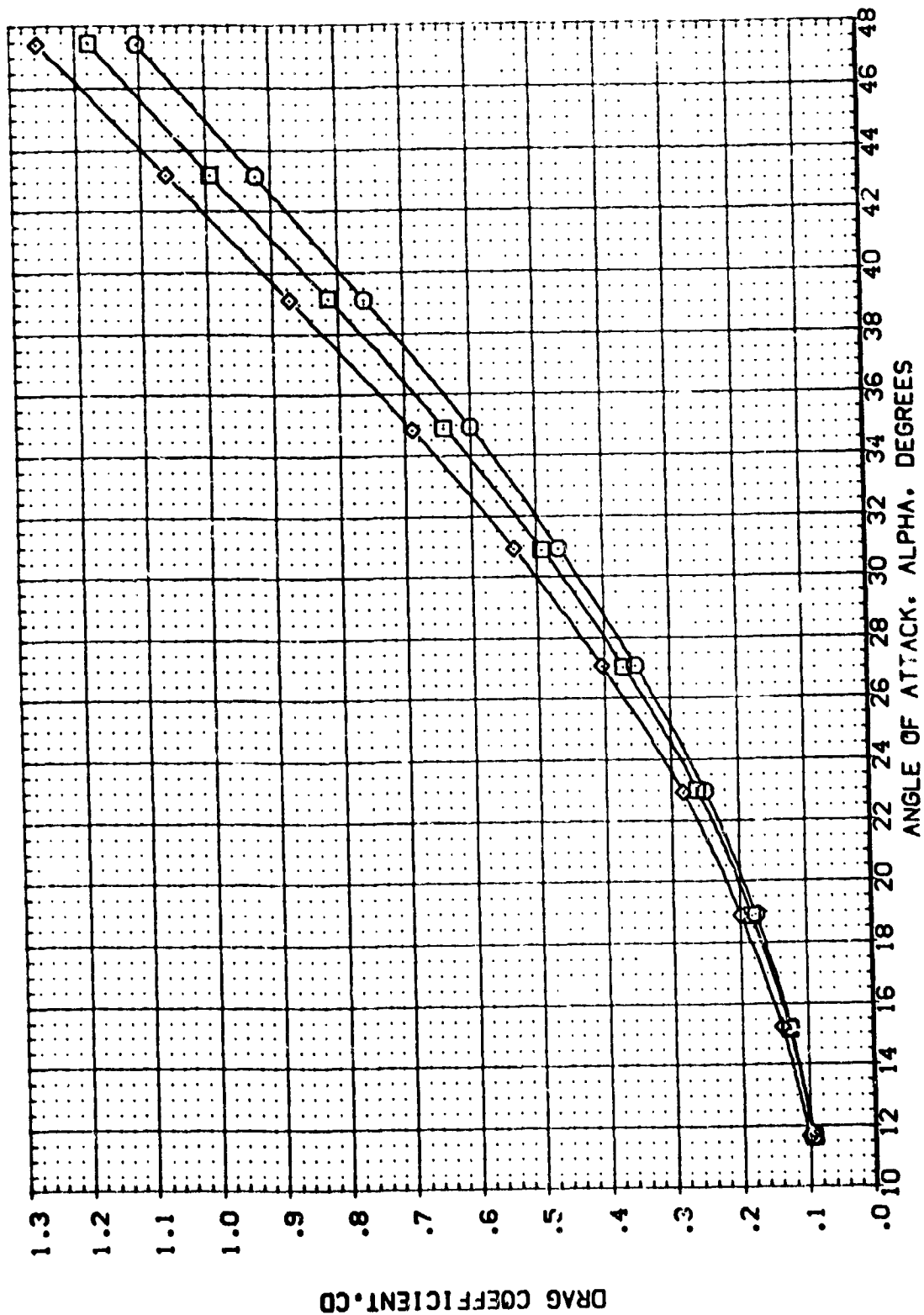


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORBN	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFO05)	AWES 3.5-176 DAB7 140 A/B ORBITER	-40.000	55.000	.000	3.000	WREF 2690.0000 50. FT.
(BEFO07)	AWES 3.5-176 DAB7 140 A/B ORBITER	0.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEFO06)	AWES 3.5-176 DAB7 140 A/B ORBITER	10.000	55.000	.000	3.000	BREF 936.6800 IN.
						XREF 1076.4800 IN.
						YREF 375.0000 IN.
						ZREF .0150 IN.
						SCALE

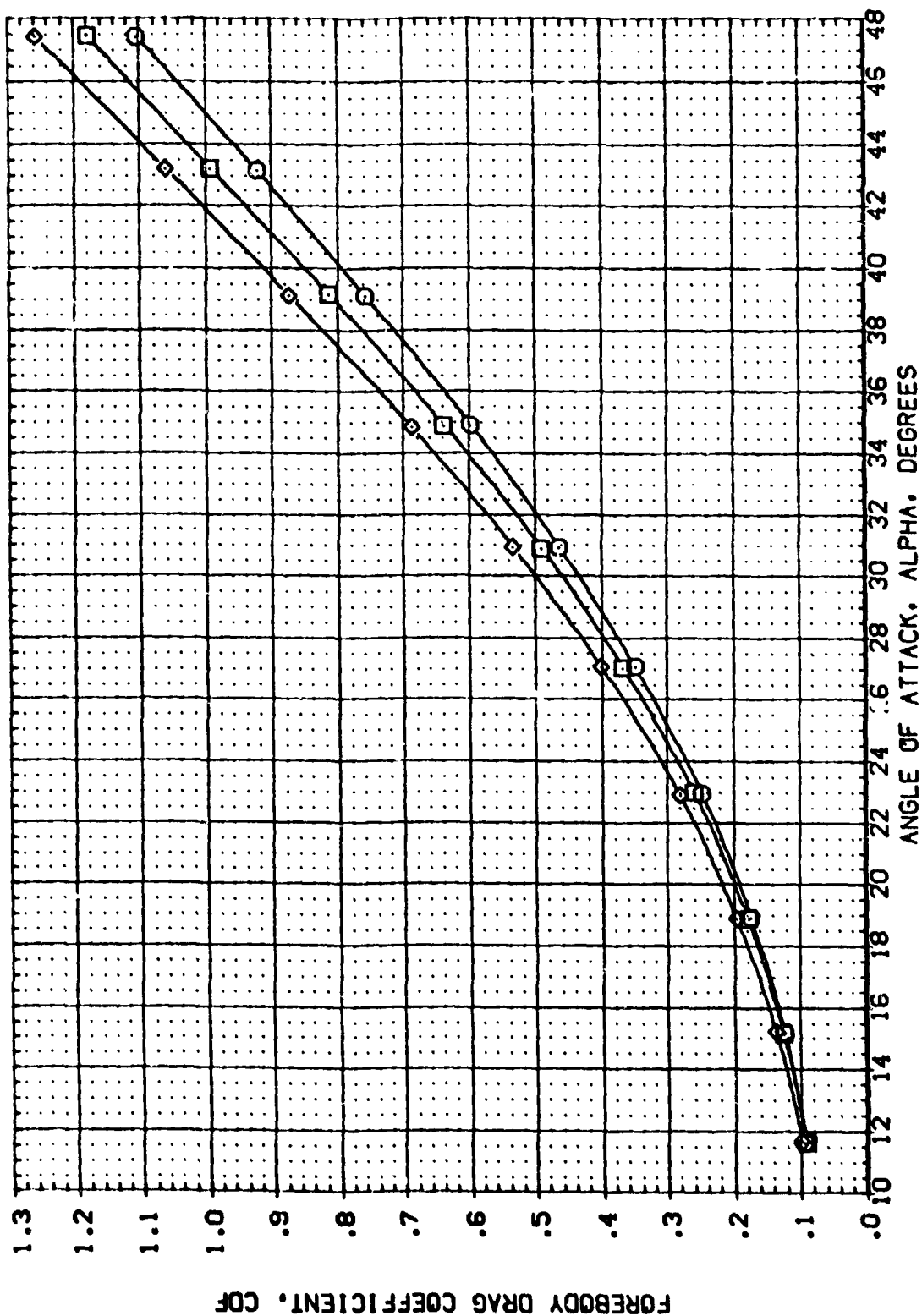


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		ELEVON		SPODBK		BDFLAP		RN/L		REFERENCE INFORMATION	
(BEF005)	AMES 3.5-176	DA87	140 A/B	088	ITER	-40.000	55.000	.000	.000	3.000	SREF	7.50	0000
(BEF007)	AMES 3.5-176	DA87	140 A/B	088	ITER	10.000	55.000	.000	.000	3.000	UREF	1250	0000
(BEF006)	AMES 3.5-176	CA87	140 A/B	088	ITER	10.000	55.000	.000	.000	3.000	UREF	536	6800
											YREF	1076	4800
											YREF	0000	0000
											YREF	375	0000
											SCALE	0150	SCALE

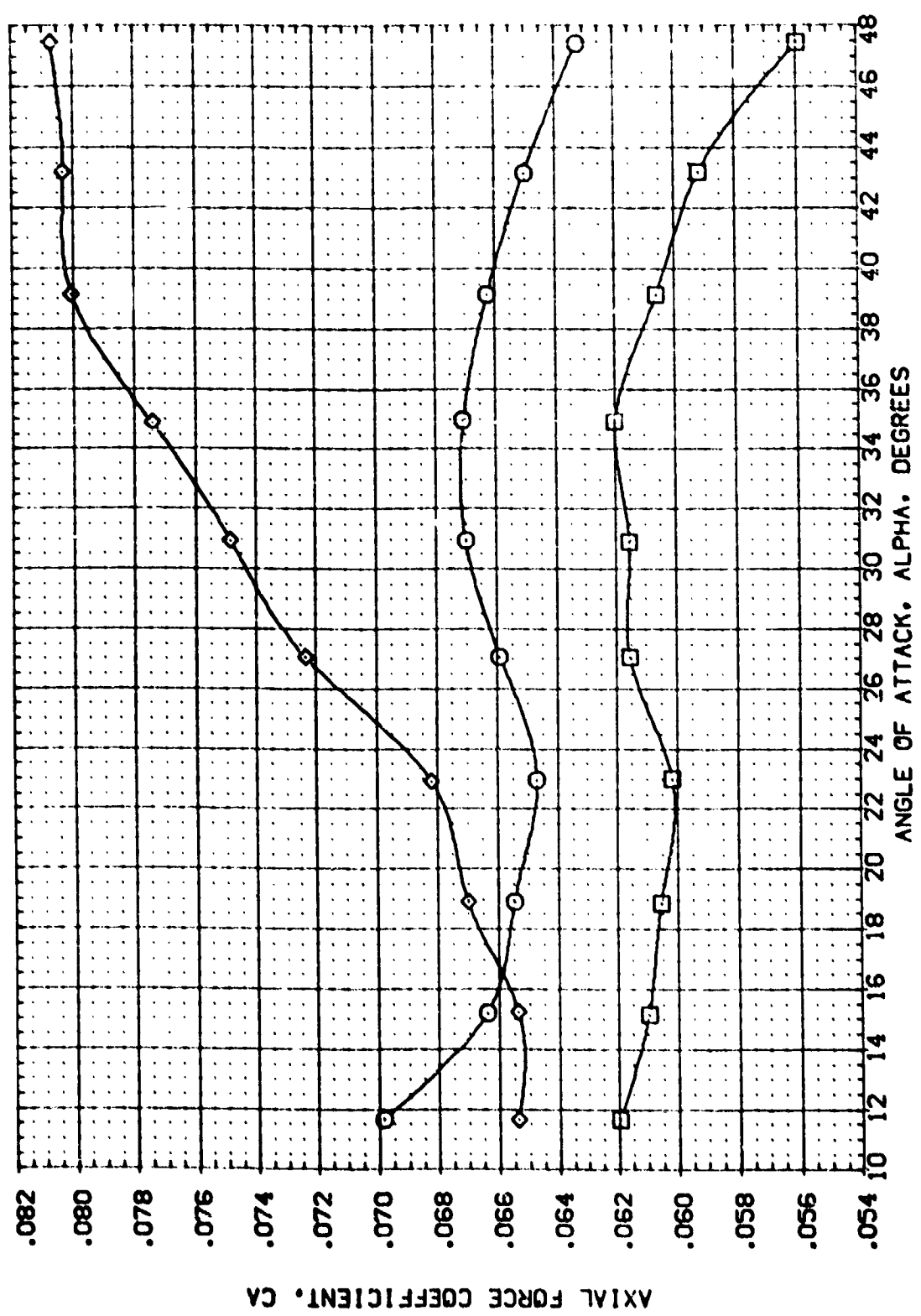


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A) MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORCK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF005)	AVES 3.5-176 OAB7 140 A/B OAB7ITER	-40.000	55.000	.000	3.000	SREF 2690.0000 SQ.FT.
(BEF007)	AVES 3.5-176 OAB7 140 A/B OAB7ITER	.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEF006)	AVES 3.5-176 OAB7 140 A/B OAB7ITER	10.000	55.000	.000	3.000	BREF 936.6800 IN.
						YREF 1076.4800 IN.
						ZREF .0000 IN.
						SCALE 375.0000 IN.
						SCALE .0150

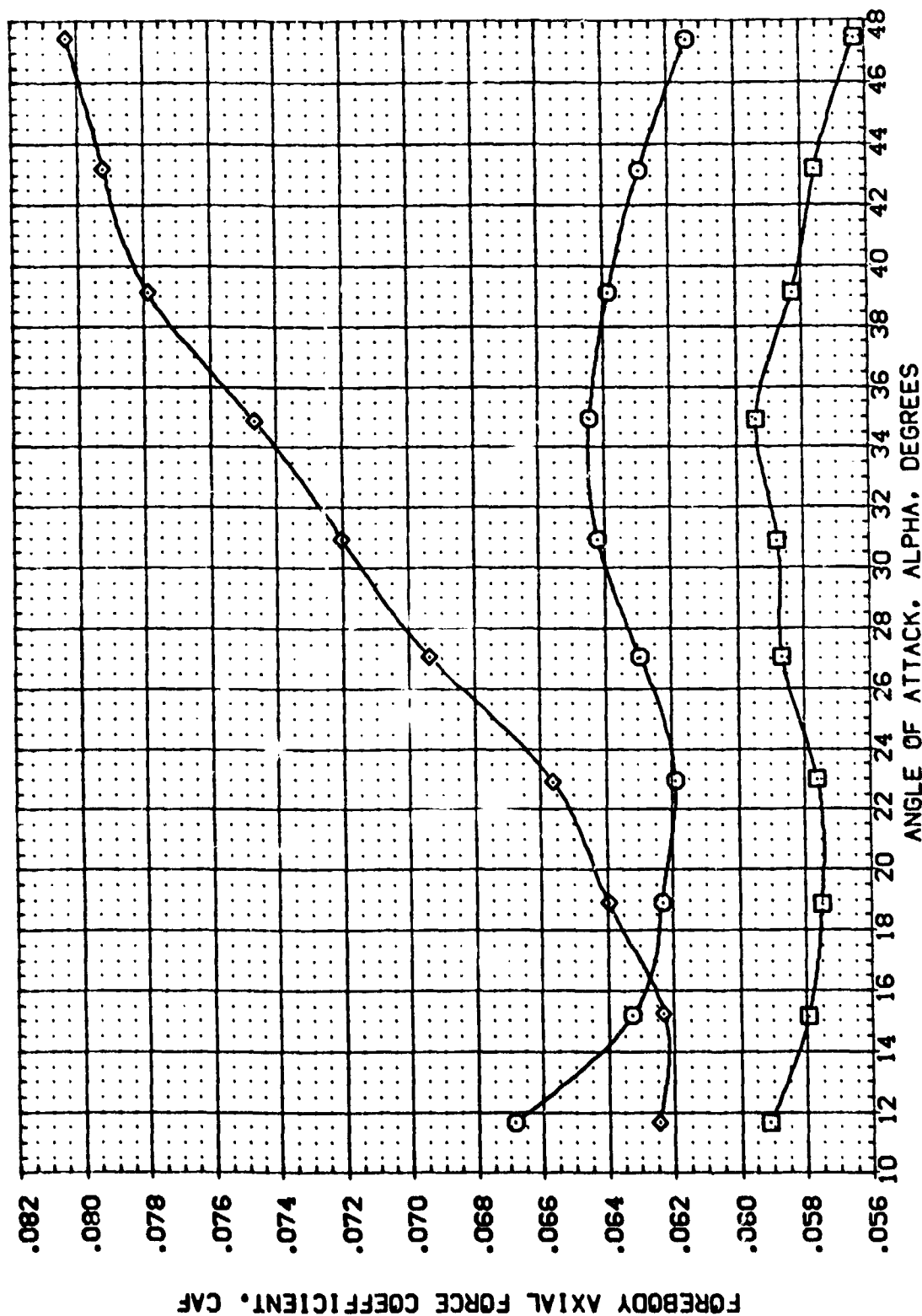


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF005)	APES 3.5-176 OA87 140 A/B ORBITER	-40.000	55.000	.000	3.000	SREF 2590.0000 52. FT.
(BEF007)	APES 3.5-176 OA87 140 A/B ORBITER	10.000	55.000	.000	3.000	LRREF 1290.0000 14.
(BEF006)	APES 3.5-176 OA87 140 A/B ORBITER		55.000	.000		BRREF 536.6800 14.
						YREF 1076.4800 14.
						ZREF .0000 14.
						SCALE 375.0000 14.
						SCALE .0150

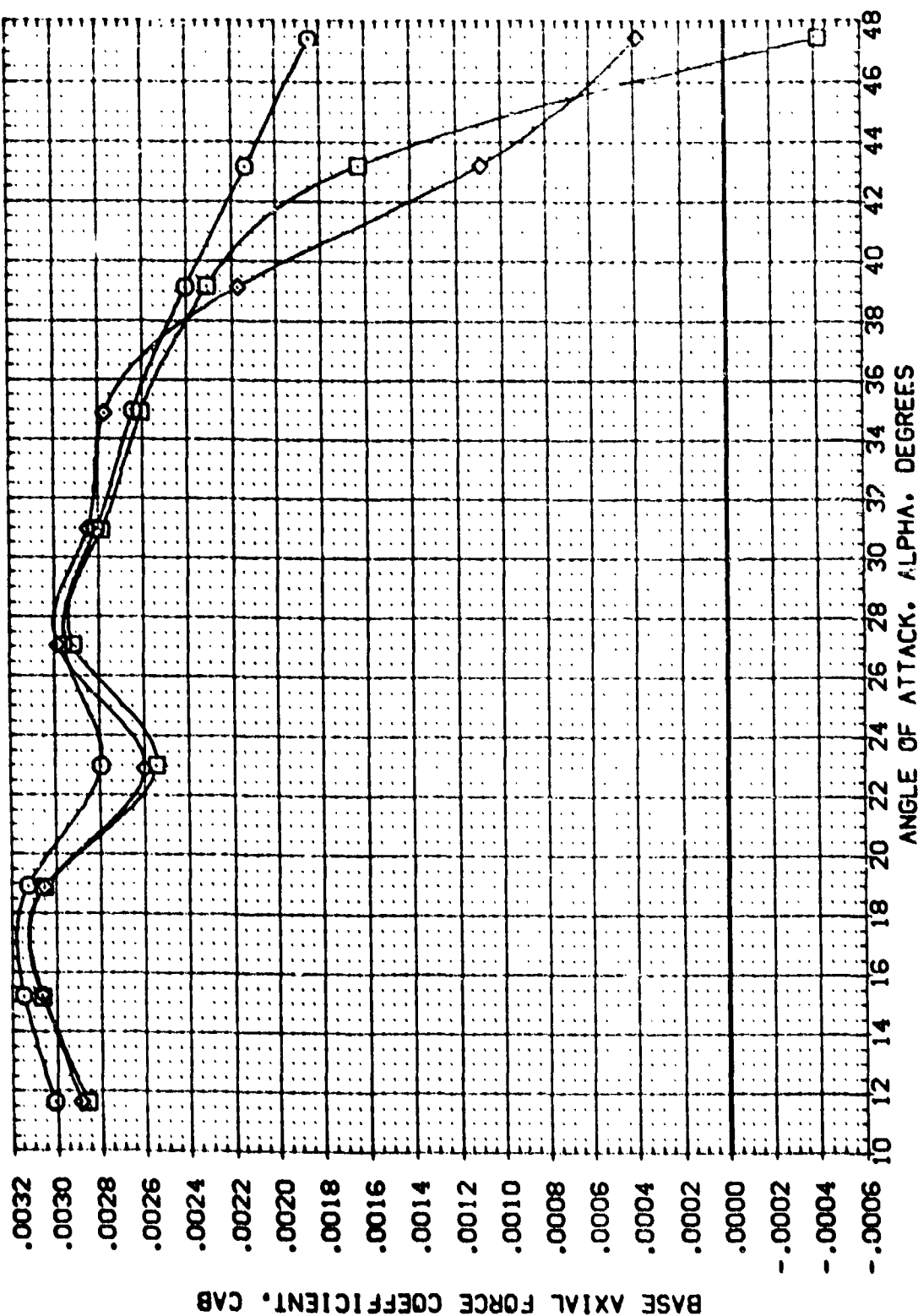


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=0.0

(A) MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF005)	APES 3.5-176 GAB7 140 A/B ORBITER	-40.000	55.000	.000	3.000	SREF 2590.0000 SQ. FT.
(BEF007)	APES 3.5-176 GAB7 140 A/B ORBITER	.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEF006)	APES 3.5-176 GAB7 140 A/B ORBITER	10.000	55.000	.000	3.000	BREF 506.6800 IN.
						YMRP 1076.4800 IN.
						ZMRP .0000 IN.
						SCALE 375.0000 IN.
						SCALE .0150

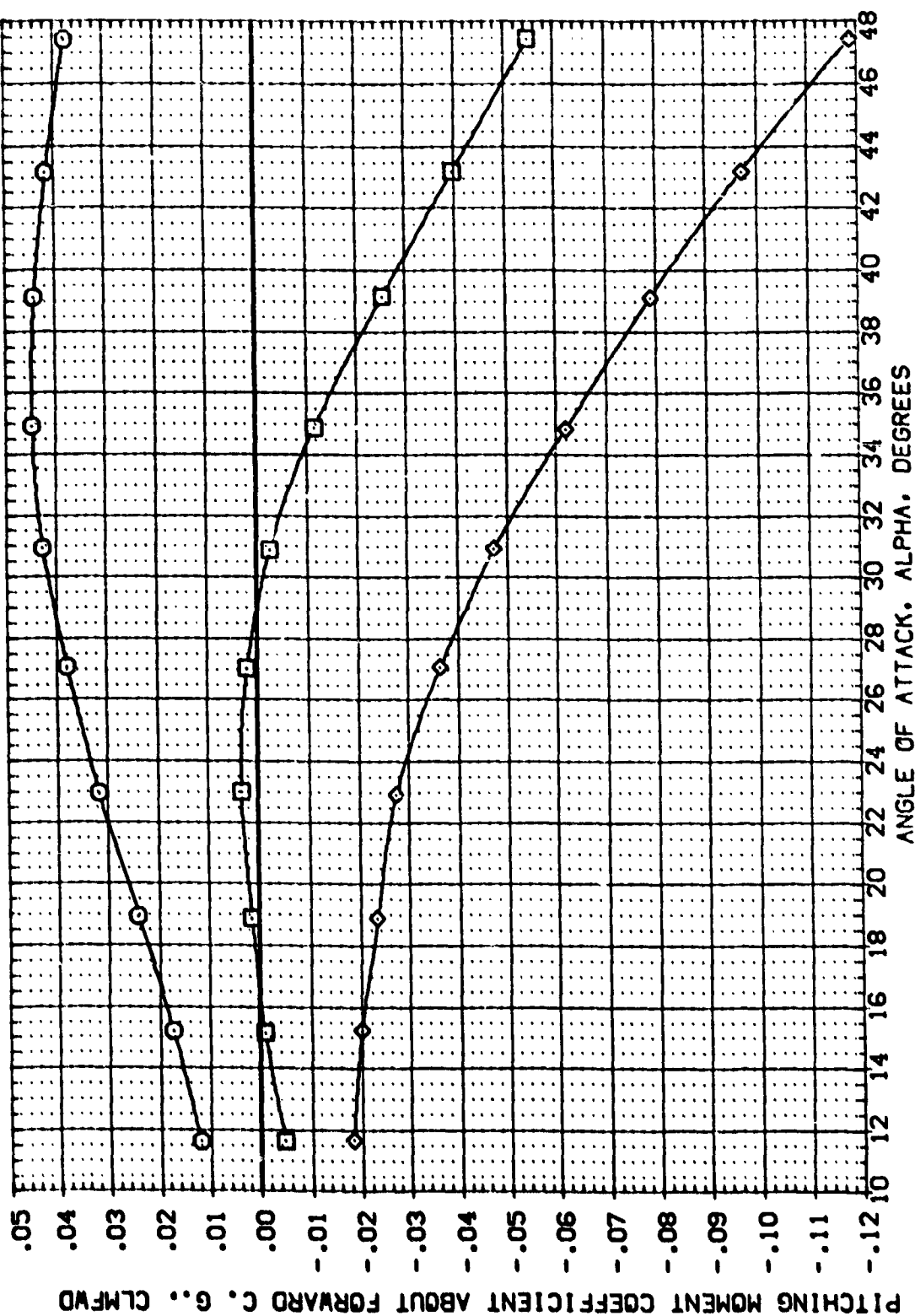


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFD05)	APES 3.5-176 QAB7 140 A/B ORBITER	-40.000	55.000	.000	3.000	SREF 2650.0000 SQ.FT.
(BEFD07)	APES 3.5-176 QAB7 140 A/B ORBITER	.000	55.000	.000	3.000	LREF 1250.3000 IN.
(BEFD06)	APES 3.5-176 QAB7 140 A/B ORBITER	10.000	55.000	.000	3.000	BREF 936.6800 IN.
						XPRP 1076.4800 IN.
						YPRP .0000 IN.
						ZPRP .0000 IN.
						SCALE .0150

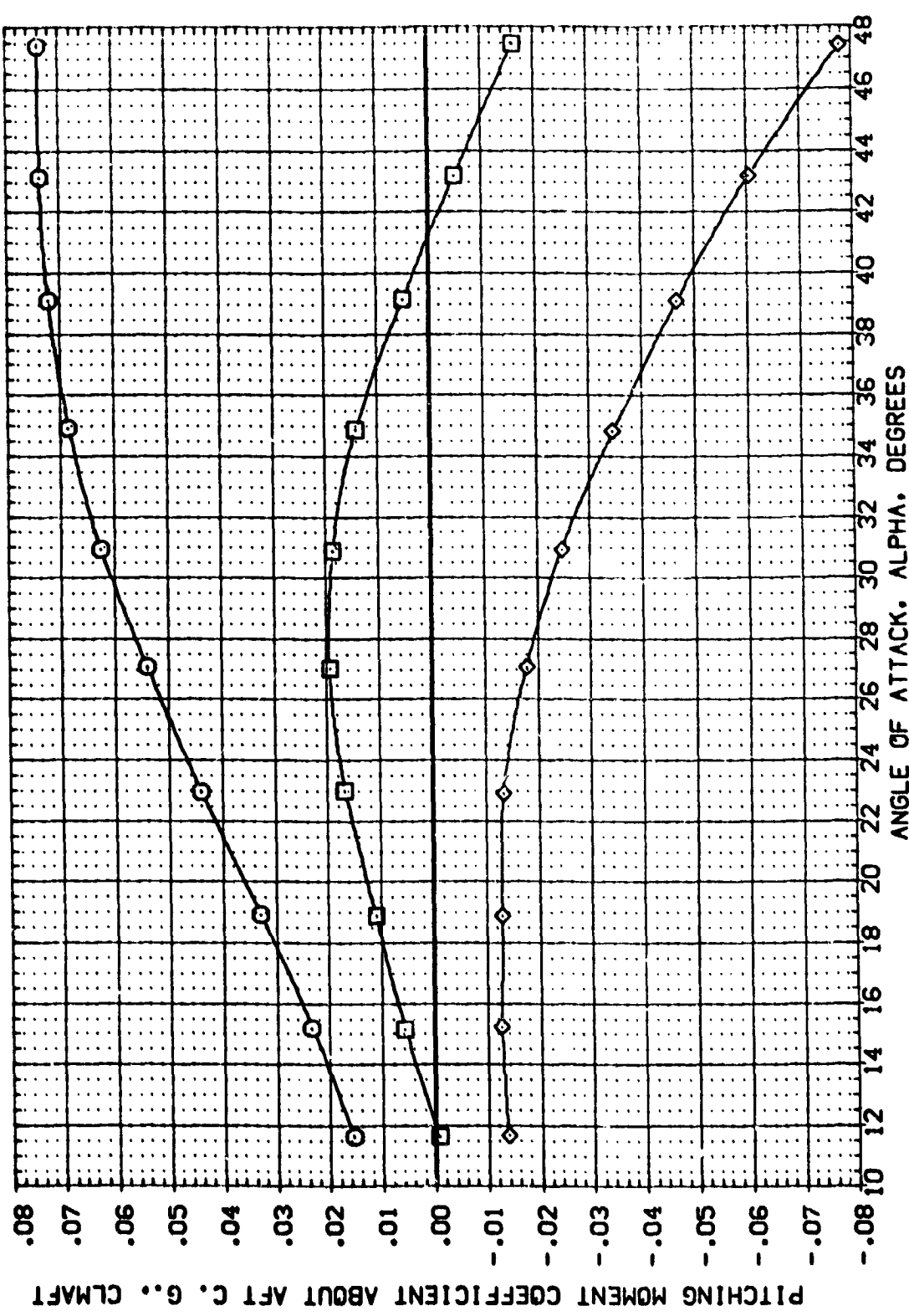
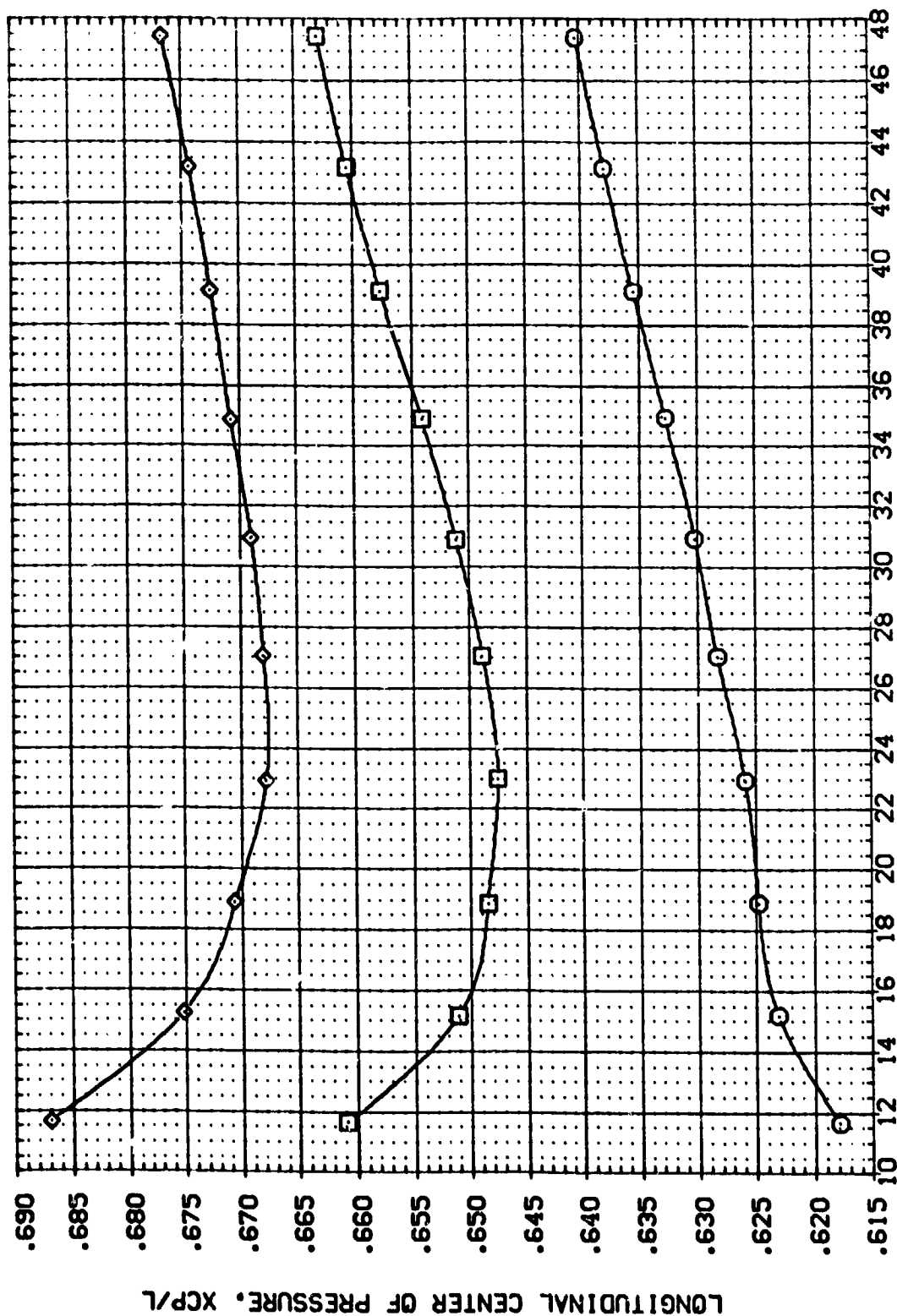


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF005)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	.000	3.000	SREF 2690.0000 SQ.FT.
(BEF007)	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEF008)	AVES 3.5-176 OAB7 140 A/B ORBITER		55.000	.000	3.000	BREF 936.6800 IN.
						YMRP 1076.4800 IN.
						ZMRP .0000 IN.
						SCALE 375.0000 IN.
						SCALE .0150 IN.



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FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF005)	APES 3.5-176 DA 17 140 A/B ORBITER	-40.000	55.000	.000	3.000	SREF 2690.0000 52.17
(BEF007)	APES 3.5-176 DA 17 140 A/B ORBITER	10.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEF006)	APES 3.5-176 DA 17 140 A/B ORBITER	10.000	55.000	.000	3.000	BREF 936.6800 IN.
						YMRP 1076.4800 IN.
						ZMRP 375.0000 IN.
						SCALE .0150 IN.

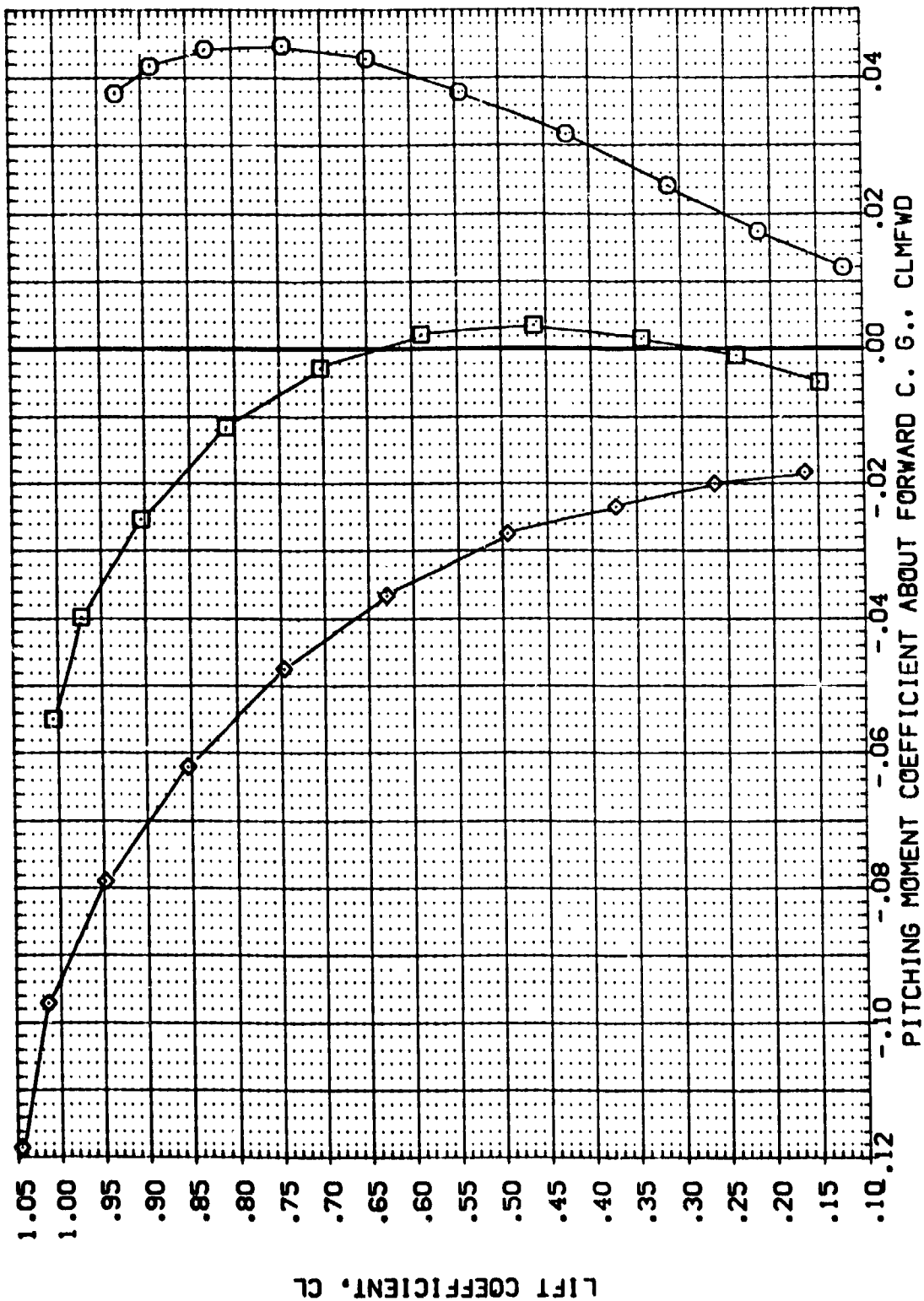


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF005)	AKES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	.000	3.000	SREF 2690.0000 50. FT.
(BEF007)	AKES 3.5-176 CAB7 140 A/B ORBITER	.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEF006)	AKES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	.000	3.000	BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

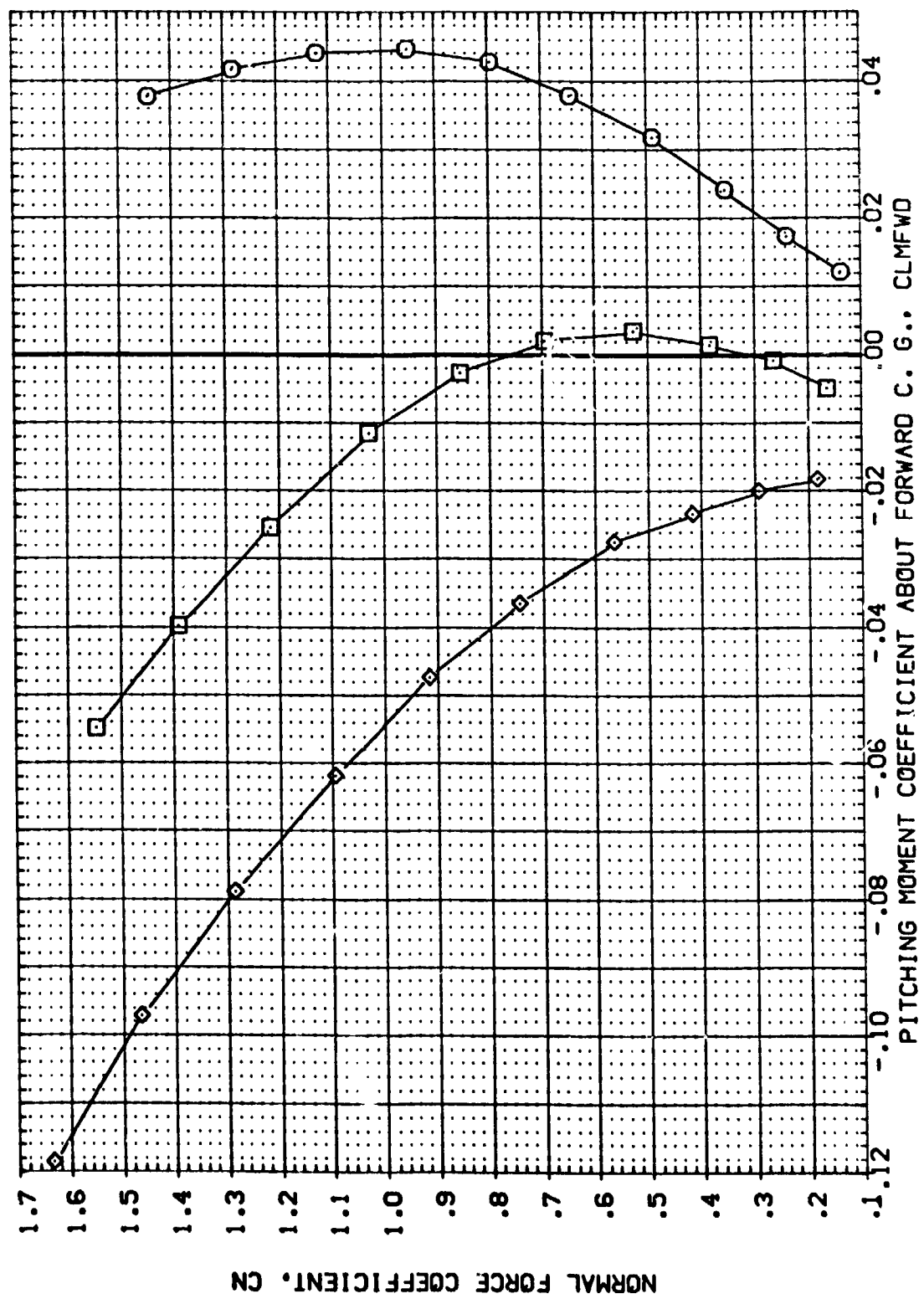


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF 705)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	.000	3.000	SREF 2690.0000 SQ.FT.
(BEF 77)	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEFL 5)	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	.000	3.000	BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0150

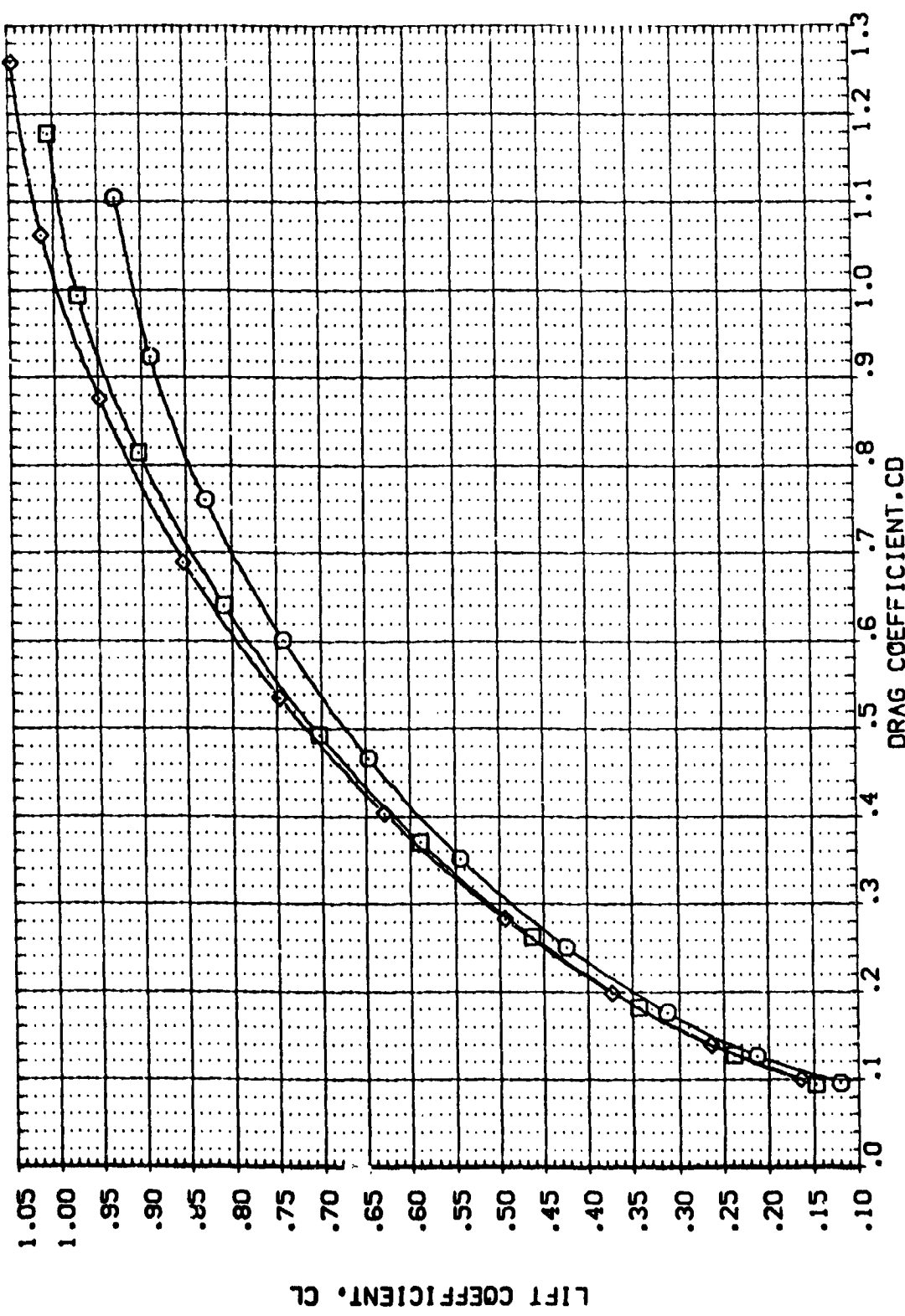


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=0.0
(A)MACH = 7.32

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BDFLAP	RN/L	REFERENCE INFORMATION
(AEF005)	□	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	.000	3.000	SREF 2690.0000 SO.FT.
(AEF007)	○	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	.000	3.000	LREF 1290.3000 IN.
(AEF006)	◇	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	.000	3.000	BREF 936.6800 IN.
							YMRP 1076.4800 IN.
							ZMRP 375.0000 IN.
							SCALE .0150

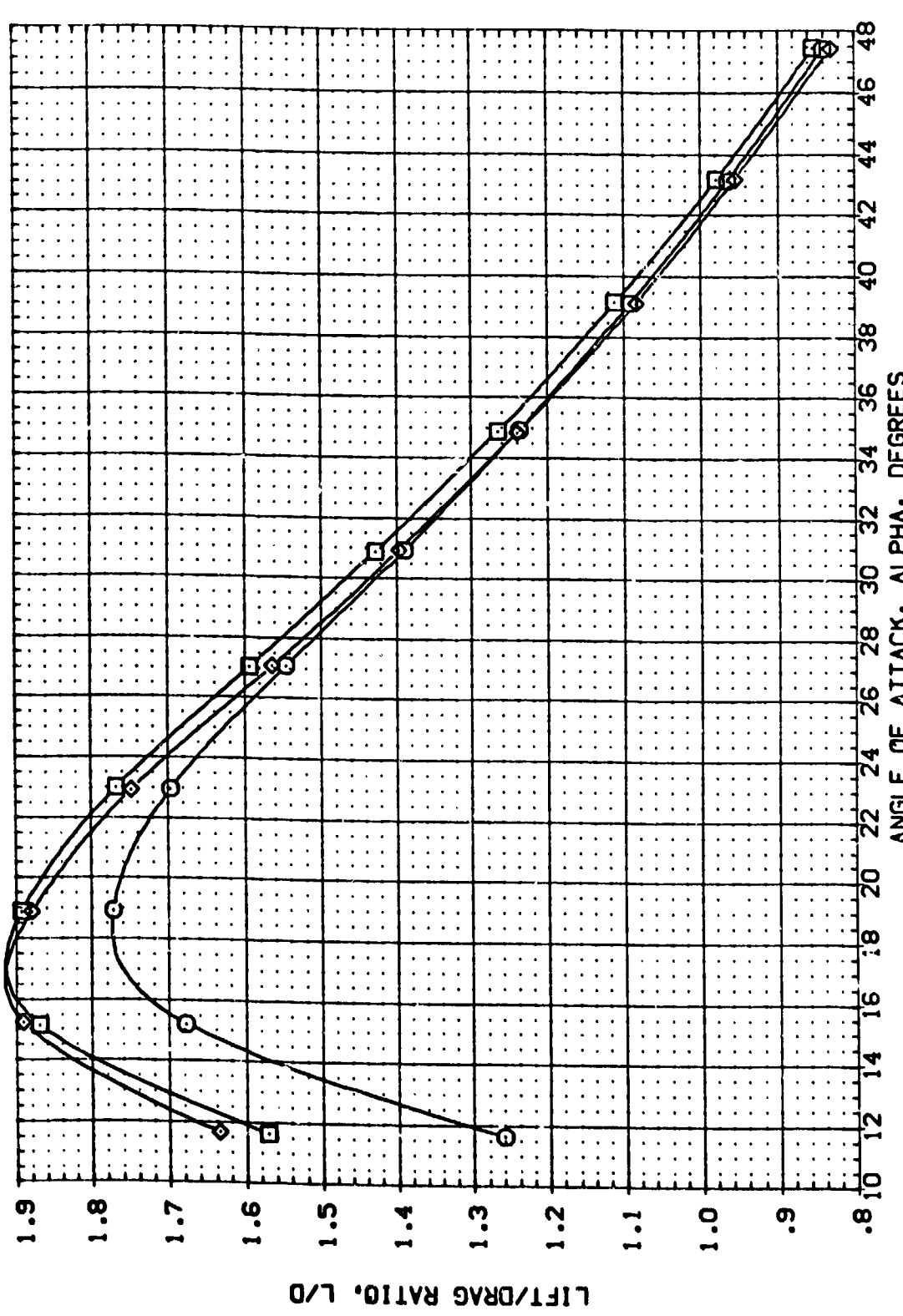


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0
(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EEF005)	AYES 3.5-176 OAB7 140 A/B ORBITER	-10.000	55.000	.000	3.000	S-REF 2690.0000 SQ. FT.
(EEF006)	AYES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	.000	3.000	L-REF 1290.3000 IN.
						B-REF 536.6800 IN.
						X-PRP 1076.4800 IN.
						Y-PRP .0000 IN.
						Z-PRP .0000 IN.
						SCALE .0150

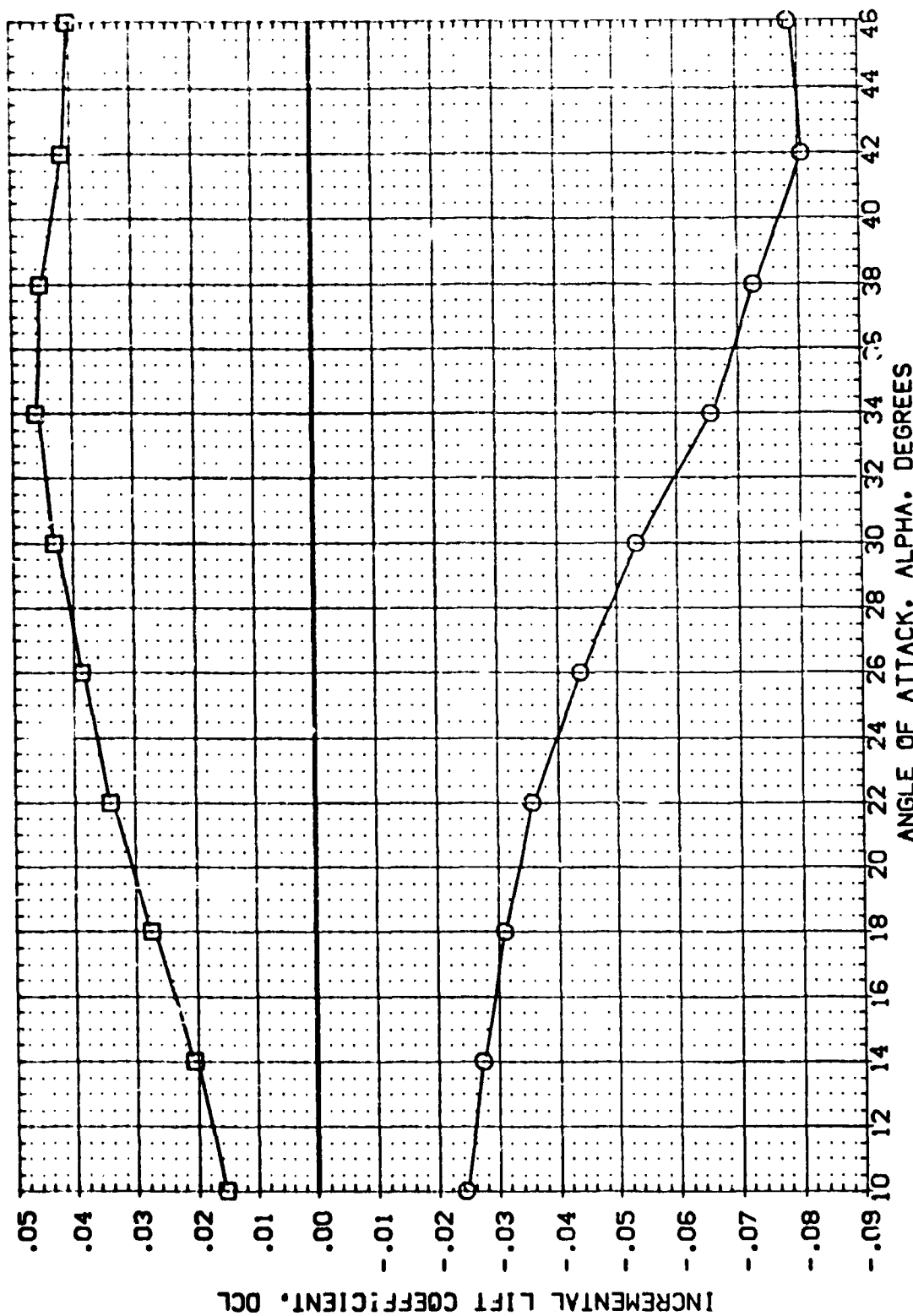


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EEF005)	AVES 3.5-176 0A87 140 A/B 0R81TER	-40.000	55.000	.000	3.000	SREF 2690.0000 SQ.FT.
(EEF006)	AVES 3.5-176 0A87 140 A/B 0R81TER	10.000	55.000	.000	3.000	LREF 1290.3000 IN.
						BREF 936.6800 IN.
						XREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150 SCALE

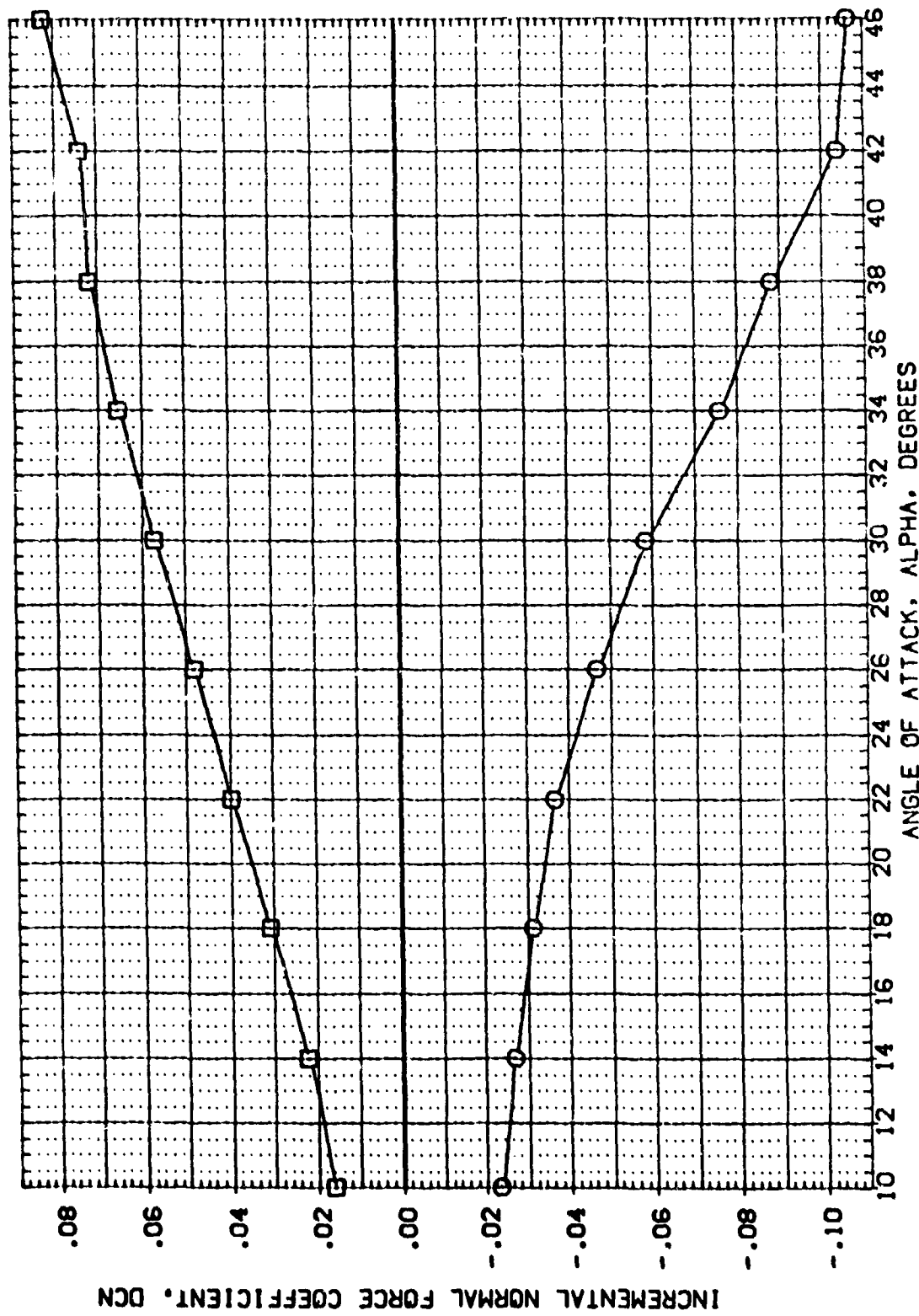



FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL (EF006)  CONFIGURATION DESCRIPTION
 AYES 3.5-176 CAB7 140 A/B ORBITER
 AYES 3.5-176 CAB7 140 A/B ORBITER

DE -40.000 55.000 55.000
 10.000

SPORRY BOFLAP RN/L
 55.000 .000 3.000
 55.000 .000 3.000

REFERENCE INFORMATION
 SREF 2690.0000 50. FT.
 LREF 1290.3000 IN.
 BREF 936.6600 IN.
 YARP 1076.4800 IN.
 ZARP 375.0000 IN.
 SCALE .0150

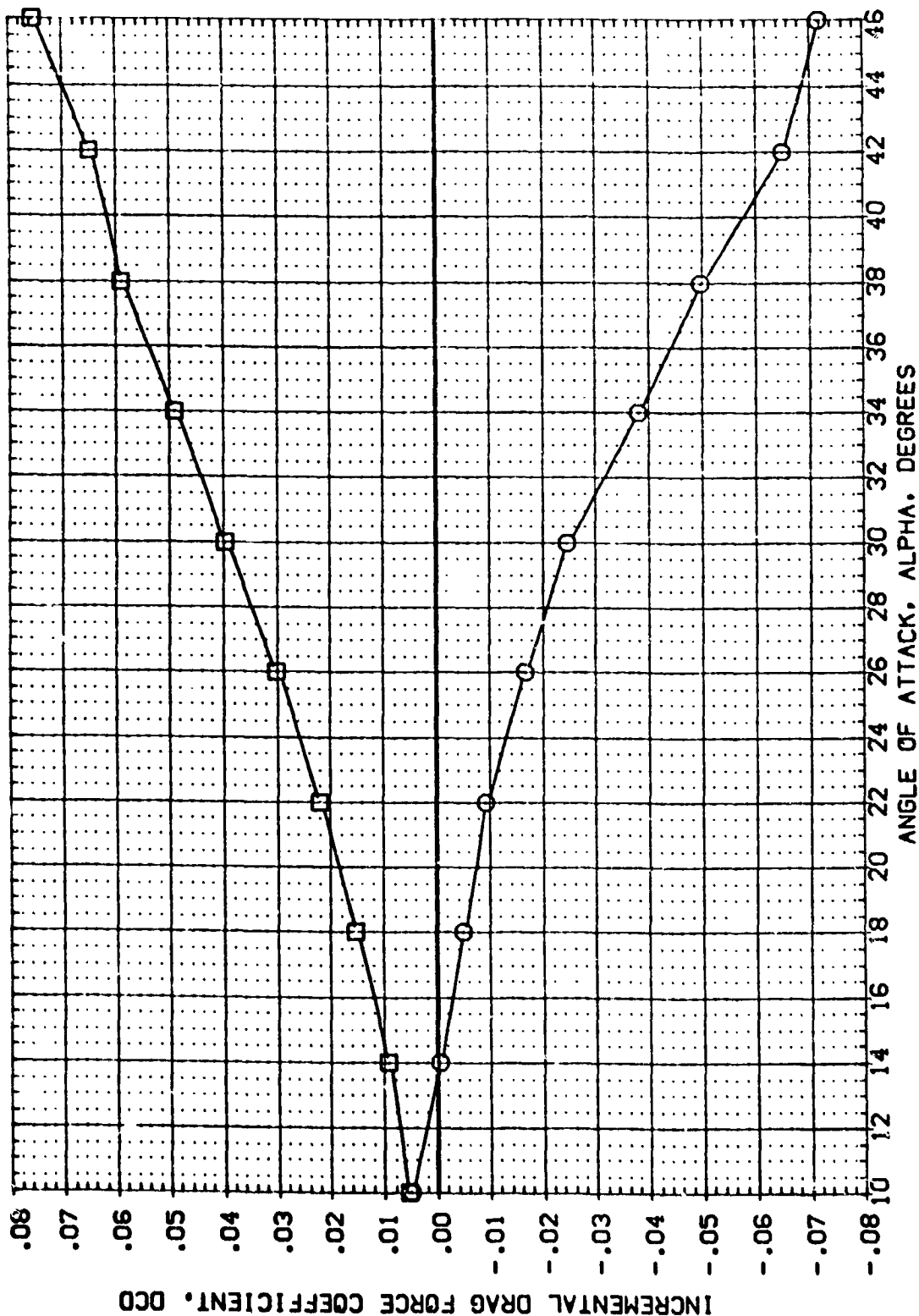


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EEF005)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	.000	3.000	SREF 2650.0000 SO.FT.
(EEF006)	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	.000	3.000	LREF 1250.3000 IN.
						BREF 936.6800 IN.
						XREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

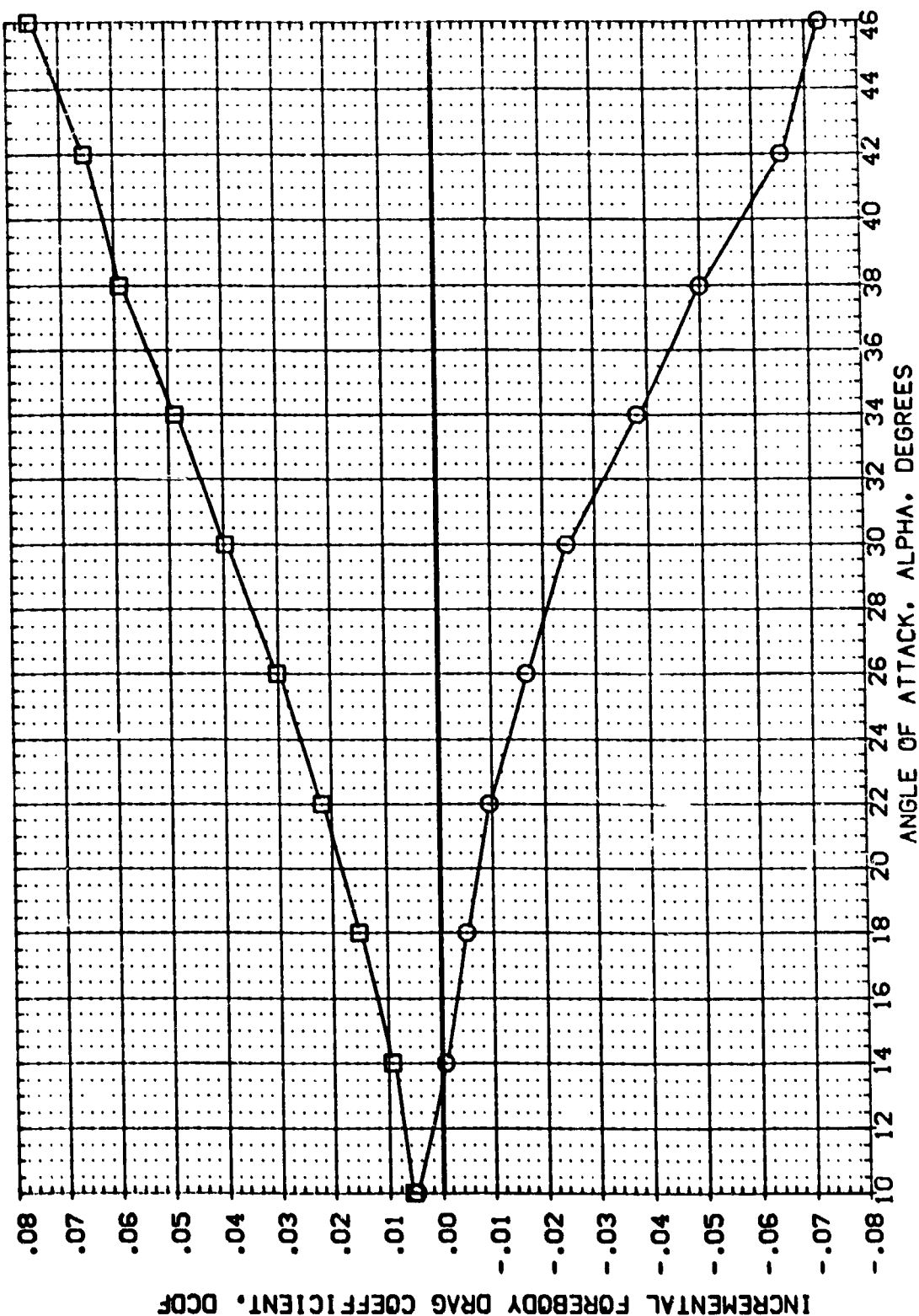


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL: (EEF005) (EEF006)  AHES 3.5-176 0A87 140 A/B 0RB1TER 140 A/B 0RB1TER

DE: -40.000 10.000

SPEED: 55.000 55.000

BDFLAP: .000 .000

RN/L: 3.000 3.000

REFERENCE INFORMATION:

	SREF	LREF	BREF	XMRP	YMRP	ZMRP	SCALE	SO. FT.
	2630.0000	1290.3000	936.6800	1076.4800	.0000	375.0000	.0150	IN.

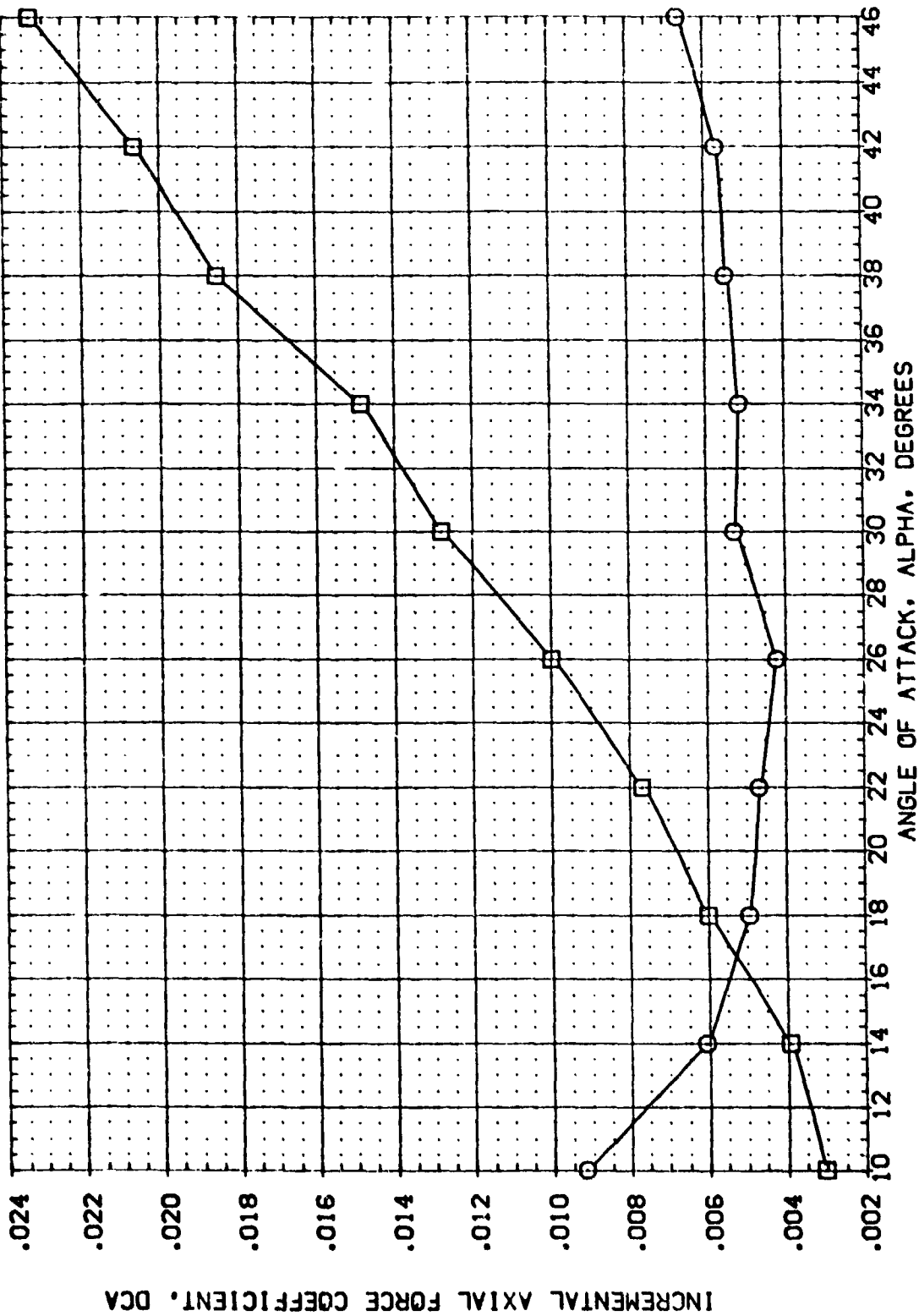


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		DE		SPDRK		BOFLAP		RN/L		REFERENCE INFORMATION	
(EFP005)	□	AMES 3.5-176	DAB7 140 A/B	ORBITER	-40.000	55.000	.000	.000	3.000	SREF	2690.0000	SG.FT.	
(EFP006)	□	AMES 3.5-176	DAB7 140 A/B	ORBITER	10.000	55.000	.000	.000	3.000	LRUF	1290.3000	IN.	
										BRUF	936.6800	IN.	
										YMRP	1076.4800	IN.	
										YMRP	.0000	IN.	
										ZMRP	375.0000	IN.	
										SCALE	.0150	SCALE	

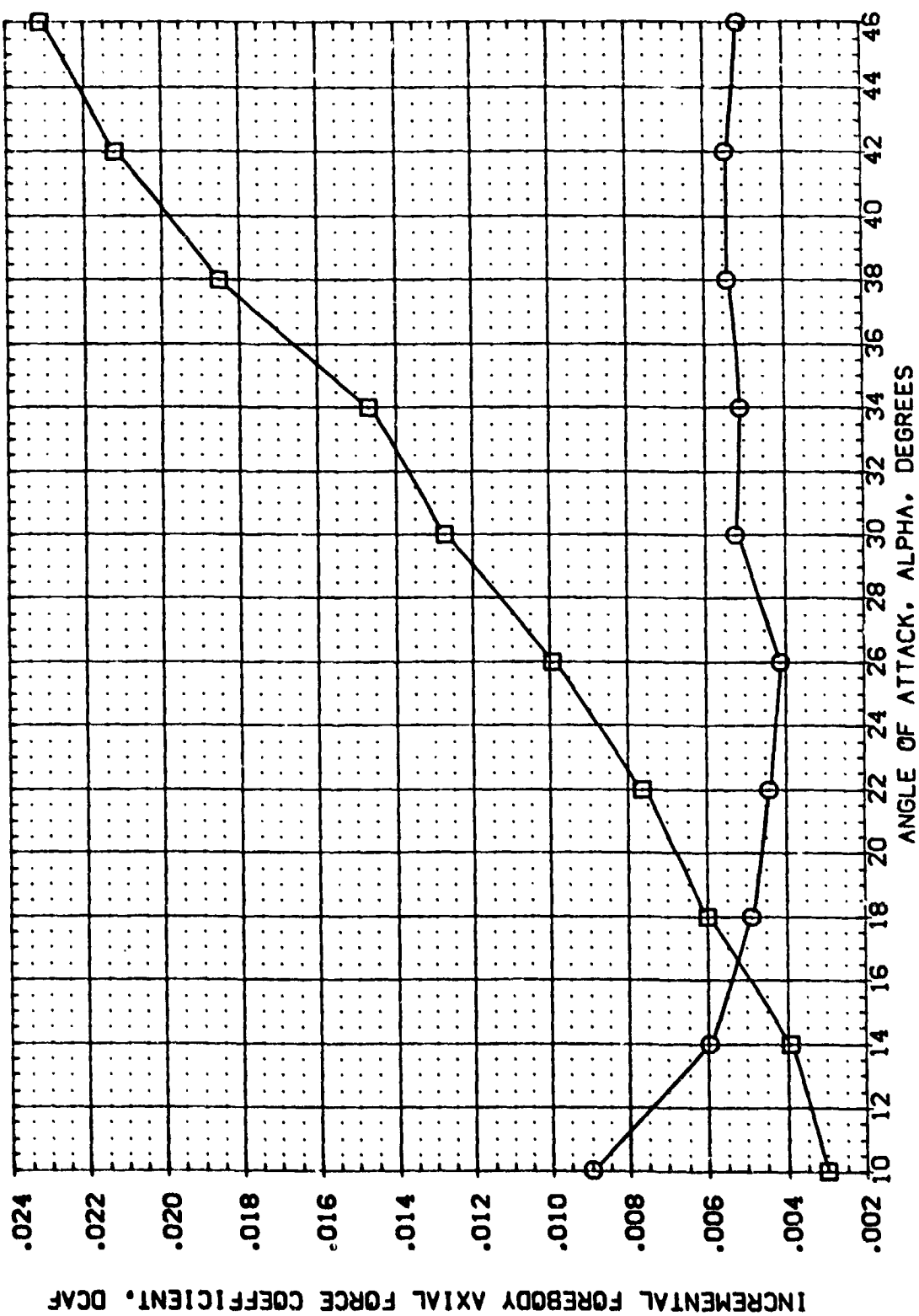


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		DE		SPOBK		BOFLAP		RNL		REFERENCE INFORMATION	
(EFDOS)	8	NPES 3.5-176	0487	140	A/B	0487	140	A/B	0487	140	A/B	0487	140
(EFDOS)	8	NPES 3.5-176	0487	140	A/B	0487	140	A/B	0487	140	A/B	0487	140
				-40.000		55.000		.000		3.000		SREF 2650.0000	
				10.000		55.000		.000		3.000		LREF 1250.3000	
												BREF 936.6800	
												XREF 1076.4800	
												YREF 375.0000	
												ZREF 375.0000	
												SCALE .0150	

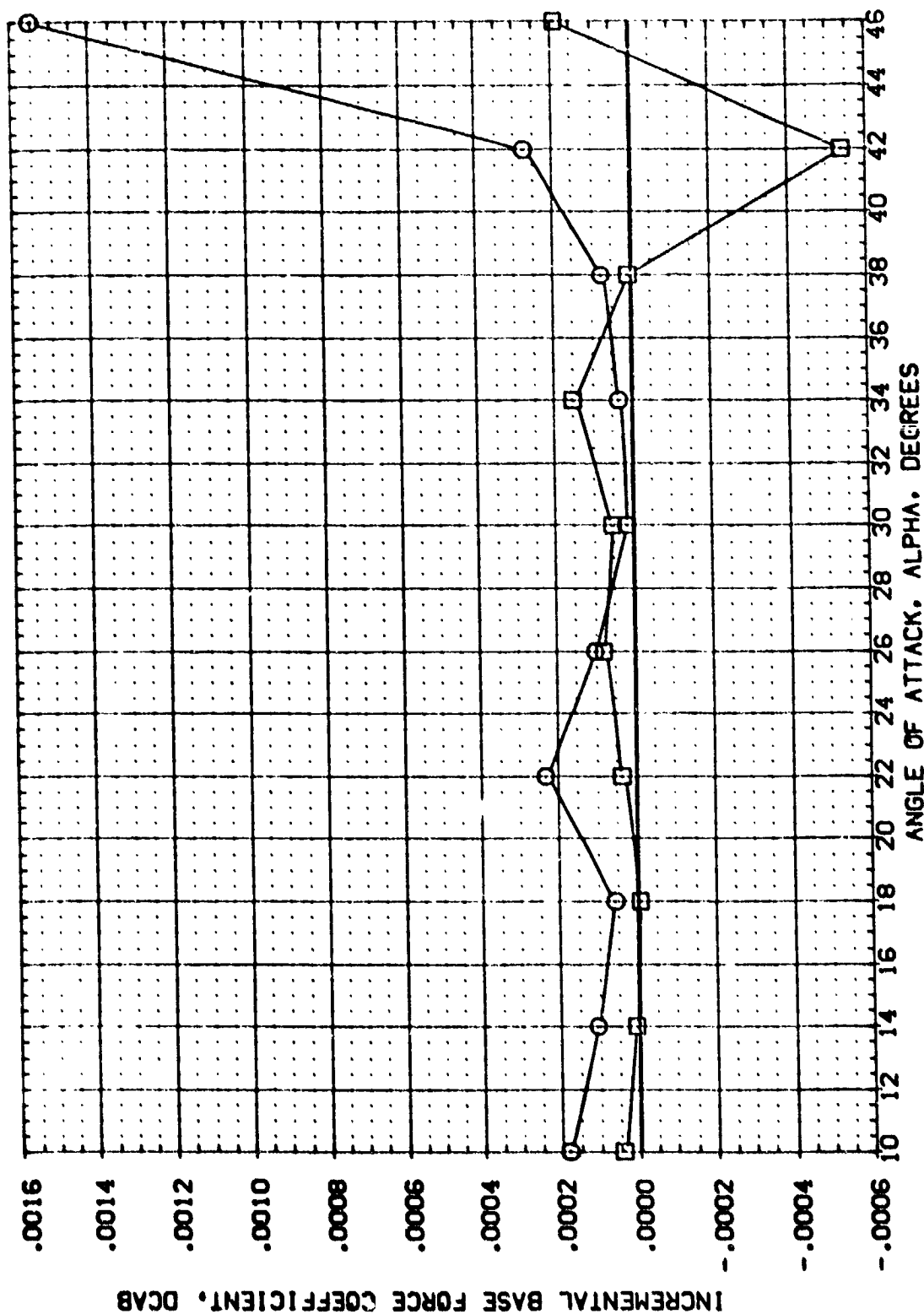


FIG. 7 ELEVON EFFECTIVENESS. RN/L=3.0, BOFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPORAK	BDFLAP	RN/L	REFERENCE INFORMATION
(EEF005)	AMES 3.5-176 SAB7 140 A/B ORBITER	-40.000	55.000	.000	3.000	SREF 2690.0000 50.000
(EEF006)	AMES 3.5-176 SAB7 140 A/B ORBITER	10.000	55.000	.000	3.000	LREF 1290.3000 N.
						BREF 976.6800 N.
						APPP 1075.4800 N.
						YAPP .0000 N.
						ZAPP 375.0000 N.
						SCALE .0150

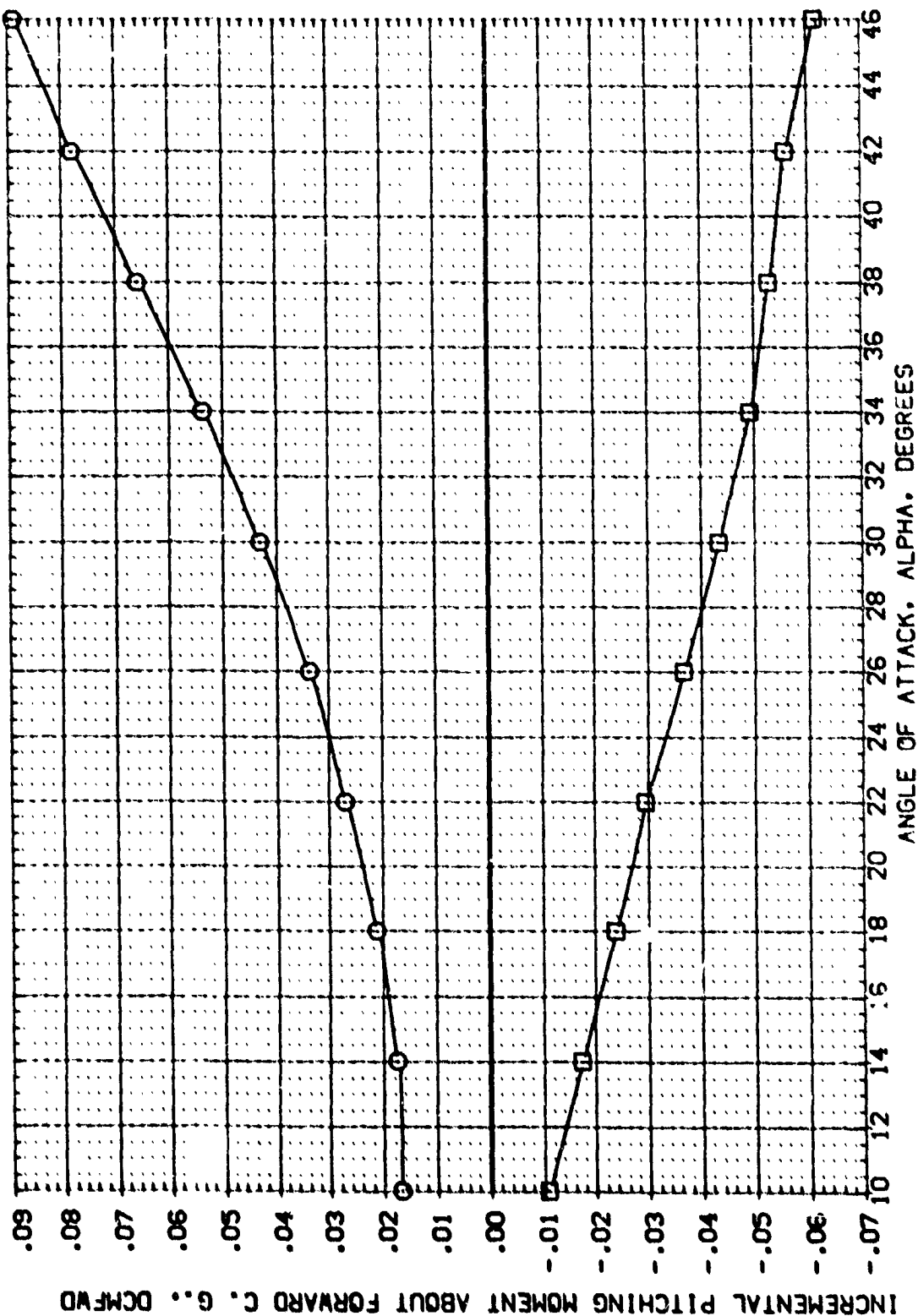


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL (EEF005)	CONFIGURATION DESCRIPTION AVES 3.5-176 DAB7 140 A/B ORBITER	DE	SPDRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EEF006)	AVES 3.5-176 DAB7 140 A/B ORBITER	-40.000 10.000	55.000 55.000	.000 .000	3.000	SREF 2690.0000 SQ. FT. LREF 1290.3000 IN. BREF 536.6800 IN. XREF 1076.4800 IN. YREF .0000 IN. ZREF 375.0000 IN. SCALE .0150

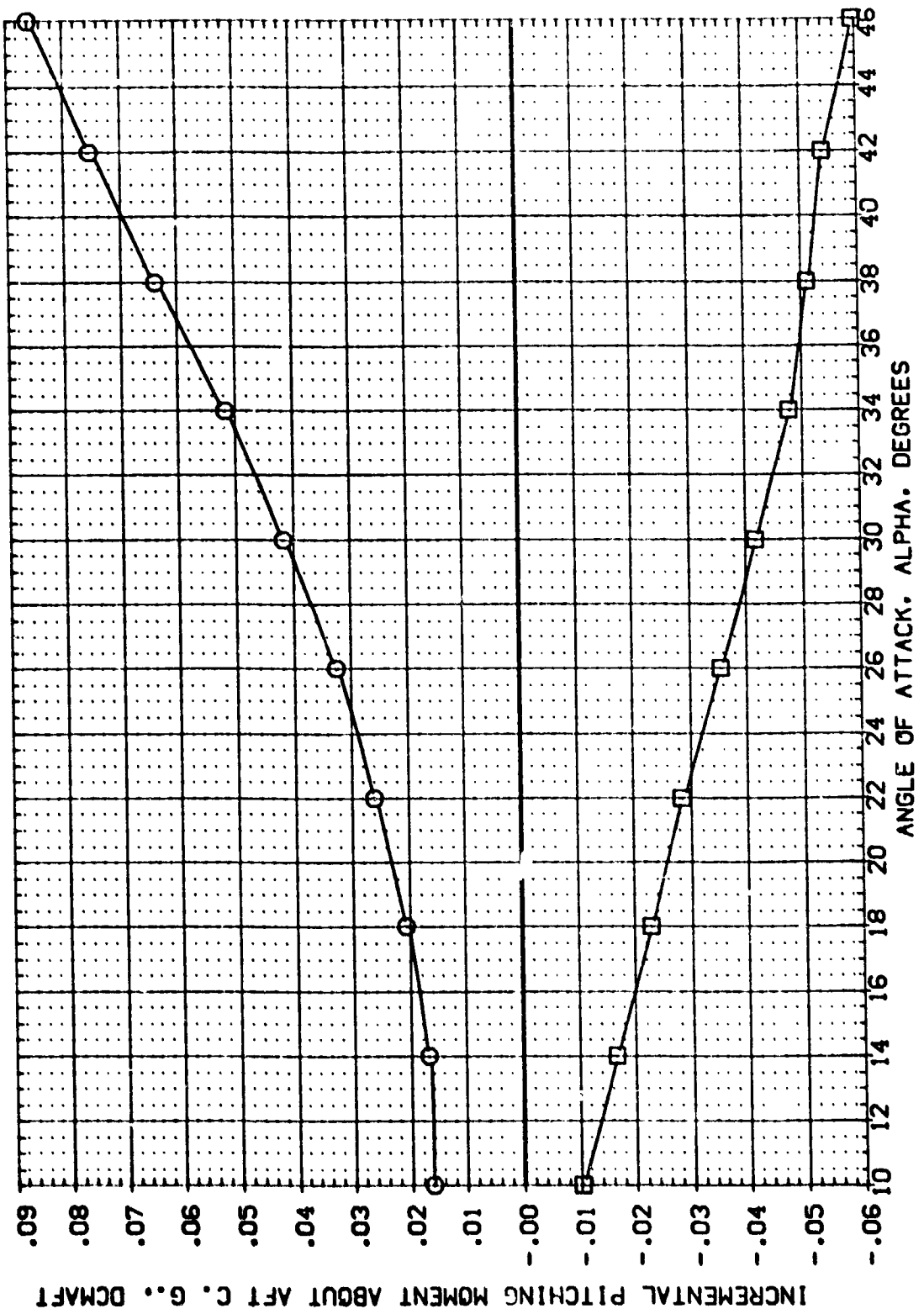


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A) MACH = 7.32

AMES 3.5-176 0A87 140 A/B ORBITER (FEF005)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	DATASET	ELEVON	SREF	REFERENCE INFORMATION
○	10.000		7.320	.000	.000	.000	2690.0000	50.FT.
□	20.000	ATLON	.000	.000	FEF005		1290.3700	IN.
◇	30.000	FLUDER	.000	55.000	FEF006		936.6400	IN.
△	40.000	RN/L	3.000				1076.4800	IN.
							375.0000	IN.
							SCALE	SCALE

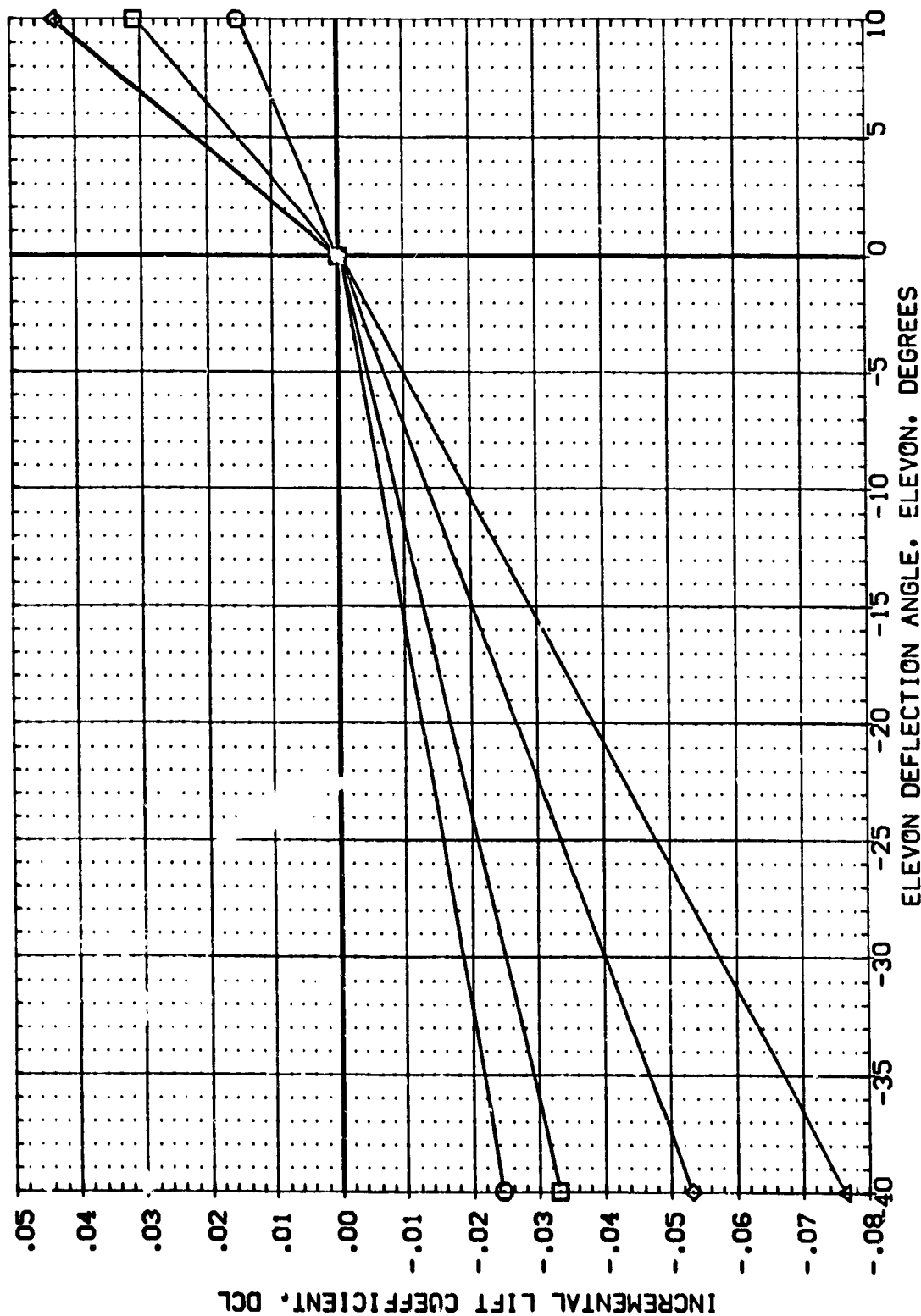


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

AMES 3.5-176 0A87 140 A/B ORBITER

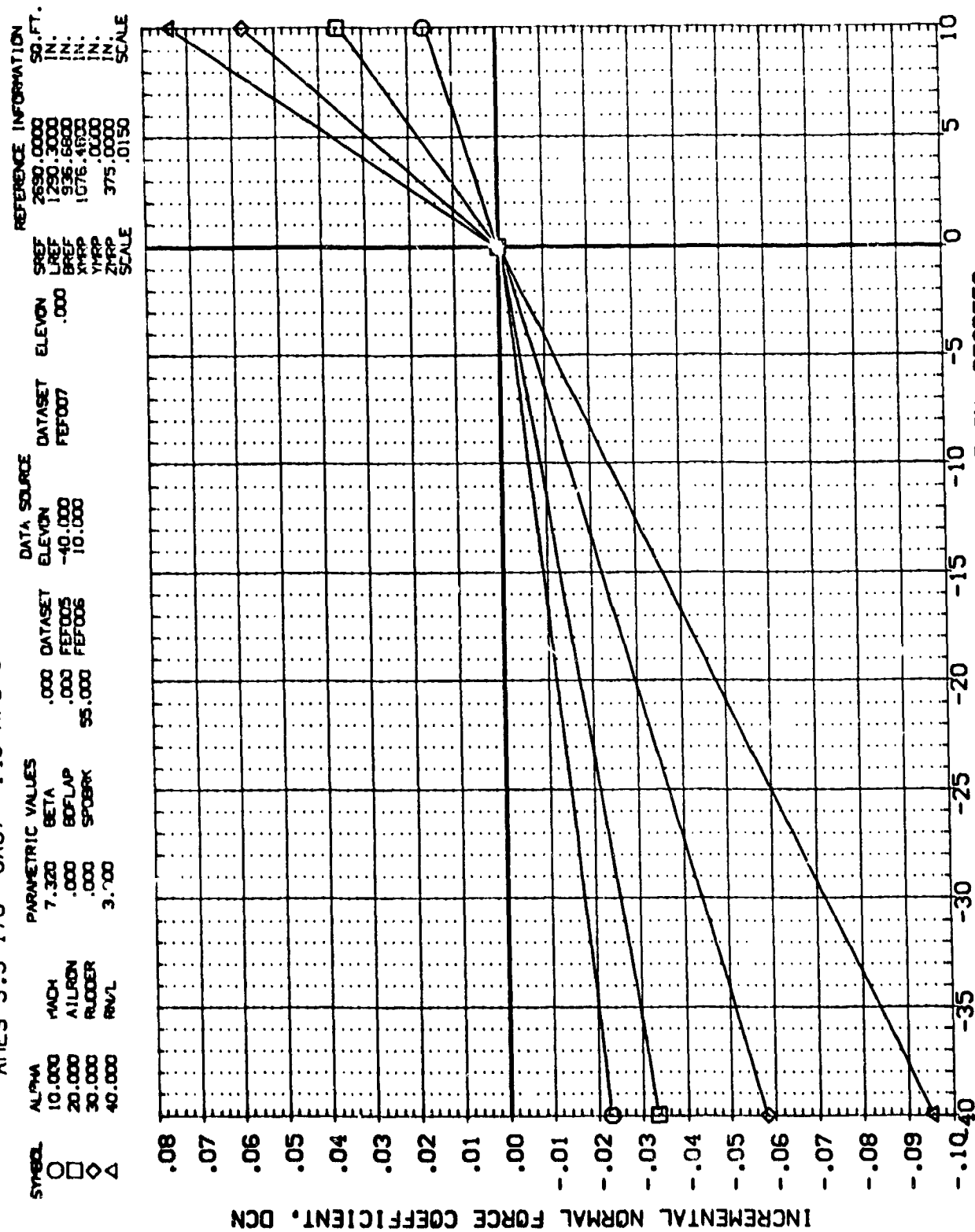


FIG. 7 ELEVON EFFECTIVENESS, $RN/L=3.0$, $\delta OFLAP=0.0$

AMES 3.5-176 0A87 140 A/B ORBITER (FEF005)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	ELFVN	ELFVN	REFERENCE INFORMATION
○	10.000		BETA	.000	FEF005	FEF005	2690.0000
□	20.000		BOFLAP	.000	FEF005	FEF005	1290.3000
◇	30.000		SPDRK	99.000	FEF005	FEF005	536.6800
△	40.000		RV/L		FEF005	FEF005	1076.4800
							375.0000
							SCALE .0150

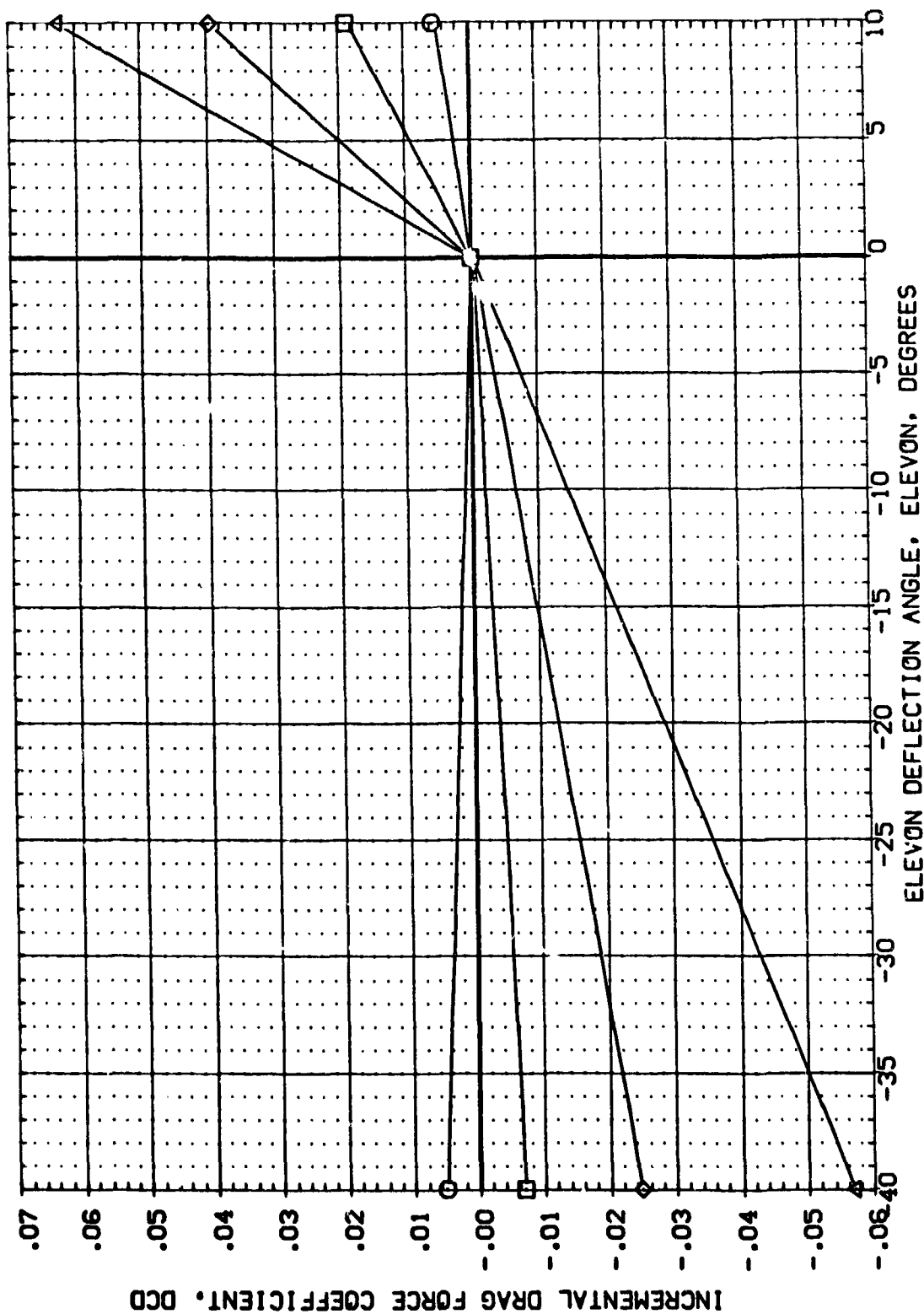


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

AMES 3.5-176 0A87 140 A/B ORBITER (FEF005)

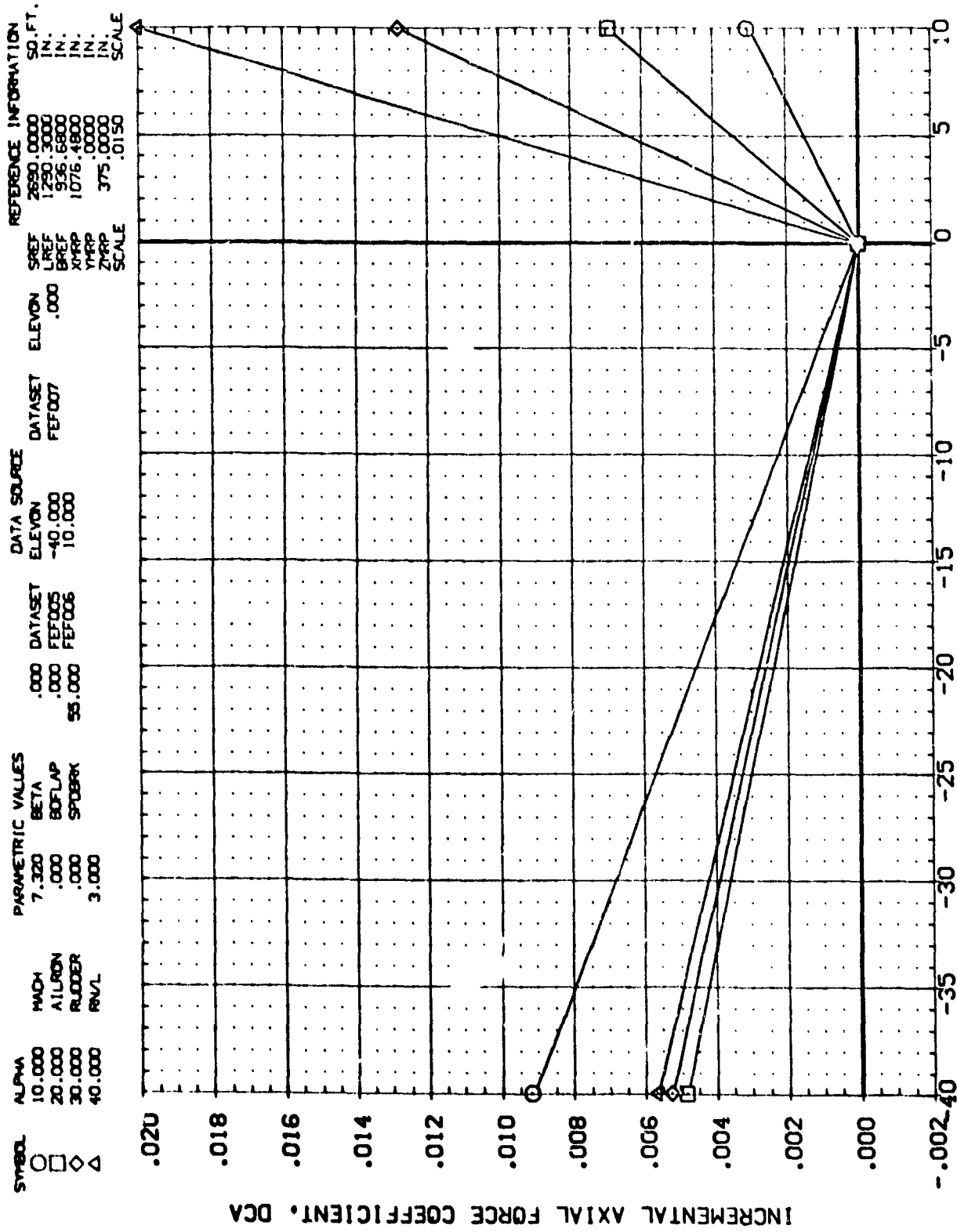


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=0.0

AMES 3.5-176 0A87 140 A/B ORBITER (FEF005)

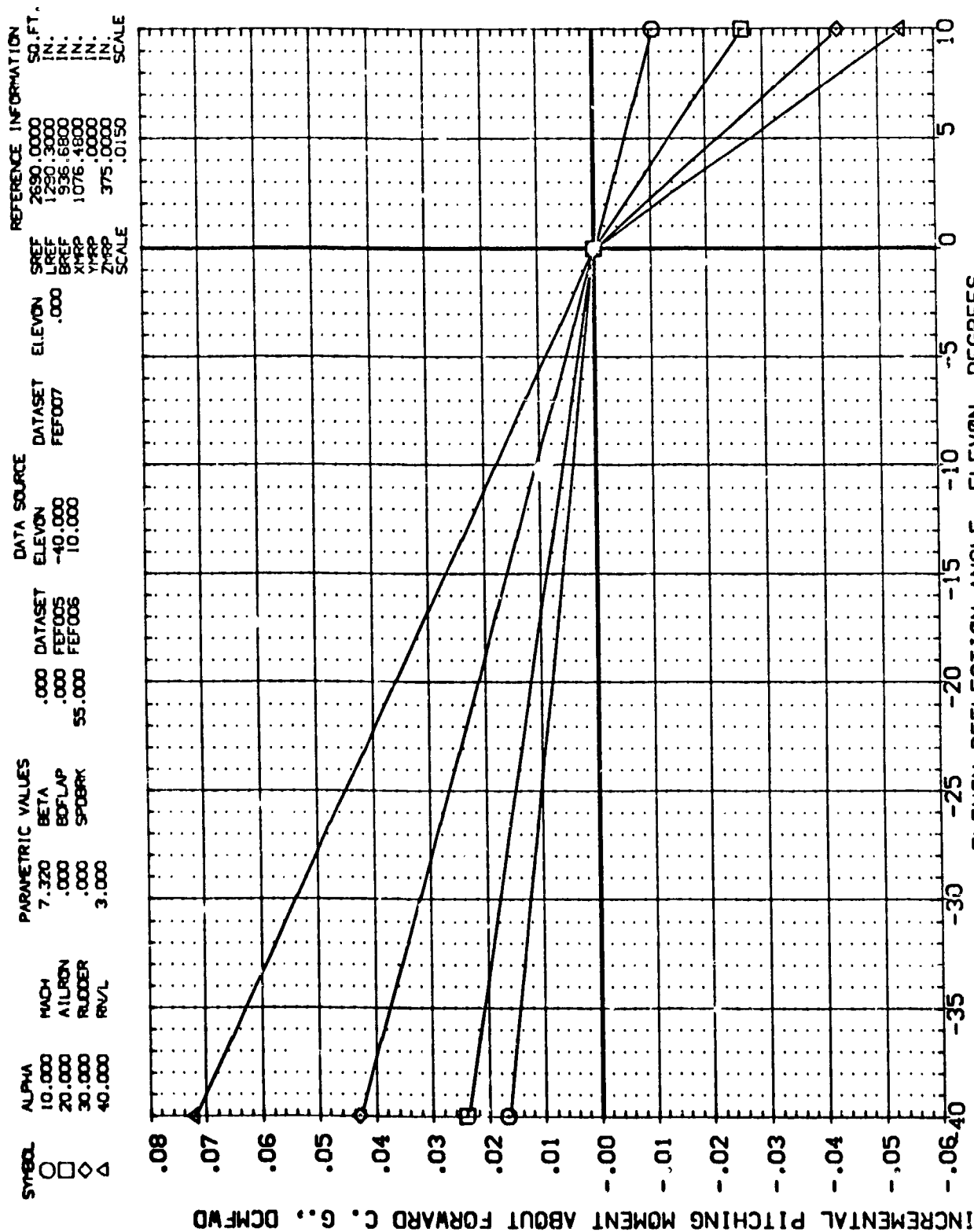


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=0.0

(FEF005)

AMES 3.5-176 0.37 140 A/B ORBITER

SYMBOL	ALPHA	MACH	PARA	VALUES	DATA SOURCE	ELEVON	ELEVON	REFERENCE INFORMATION
□	10.000	AILRON	7.34	BETA	.000	FEF007	SREF	2690.0070
◇	20.000	RUDDER	.000	REFLAP	.000	FEF005	LREF	1290.3000
△	30.000	RV/L	.000	SDBRK	55.000	FEF006	BREF	936.6800
	40.000		3.000				YMRP	1076.4800
							ZMRP	375.0000
							SCALE	.0150

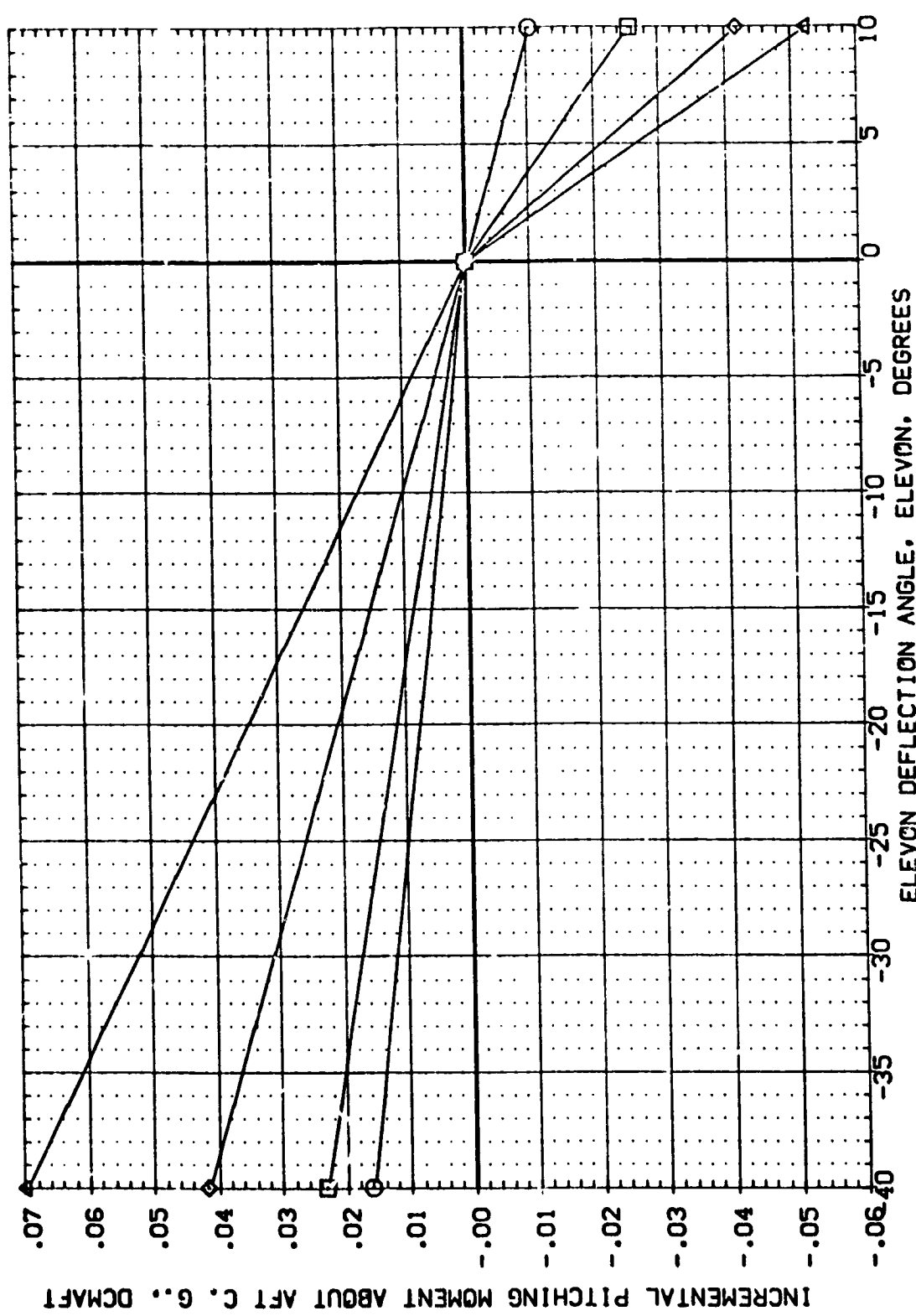


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORON	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFOID)	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	SREF 2690.0000 SQ. FT.
(BEFOID)	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	LREF 1290.3000 IN.
						BREF 936.6800 IN.
						MREF 1076.4800 IN.
						WREF 375.0000 IN.
						ZREF 0150 SCALE

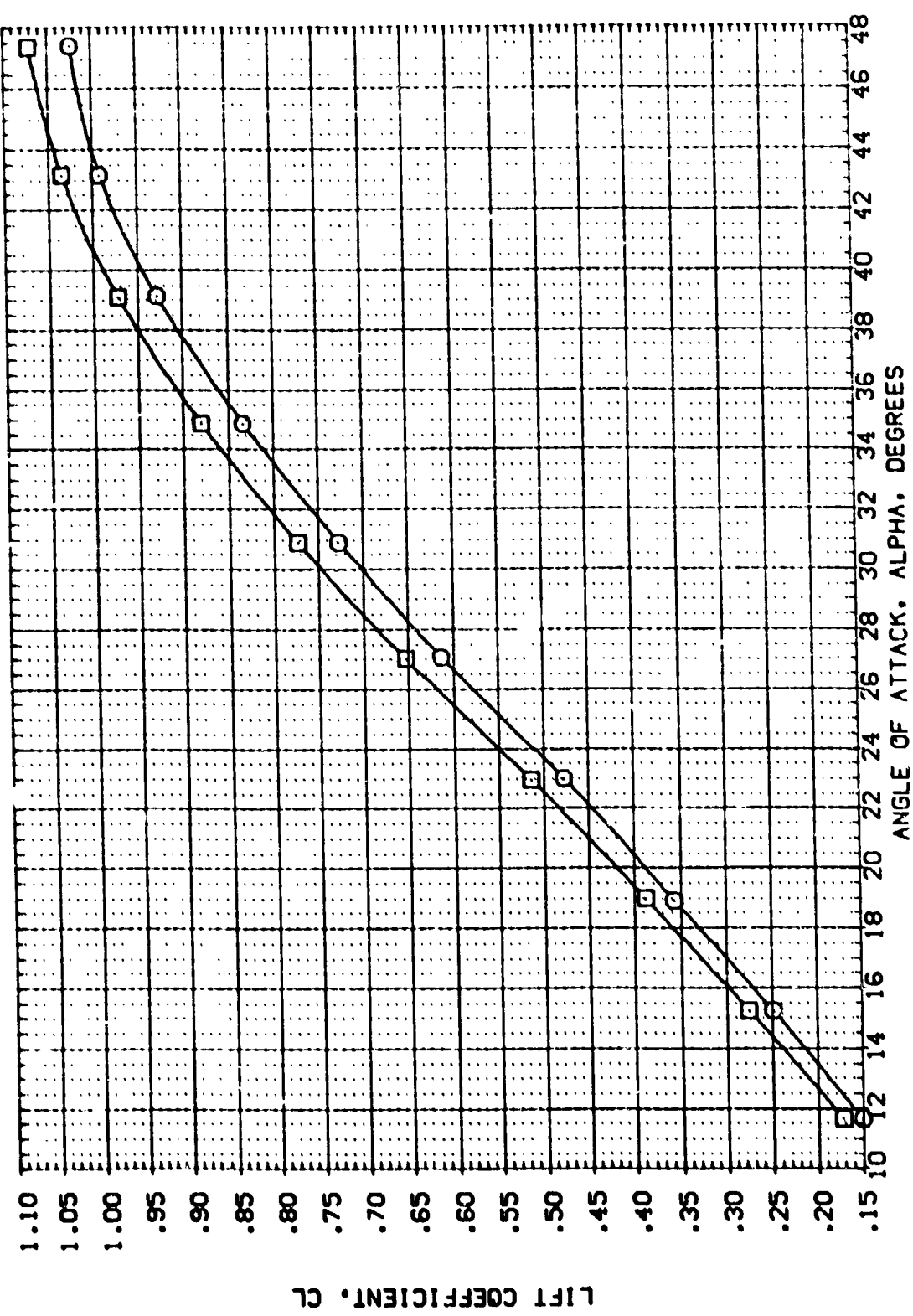


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFO10)	AVES 3.5-176 OAB7 140 A/B OAB1TER	.000	55.000	16.300	3.000	SREF 2690.0000 SQ.FT.
(BEFO11)	AVES 3.5-176 OAB7 140 A/B OAB1TER	10.000	55.000	16.300	3.000	LREF 1290.0000 IN.
						BREF 936.6800 IN.
						YMRP 1076.4800 IN.
						ZMRP .0000 IN.
						SCALE 375.0000 IN.
						SCALE .0150

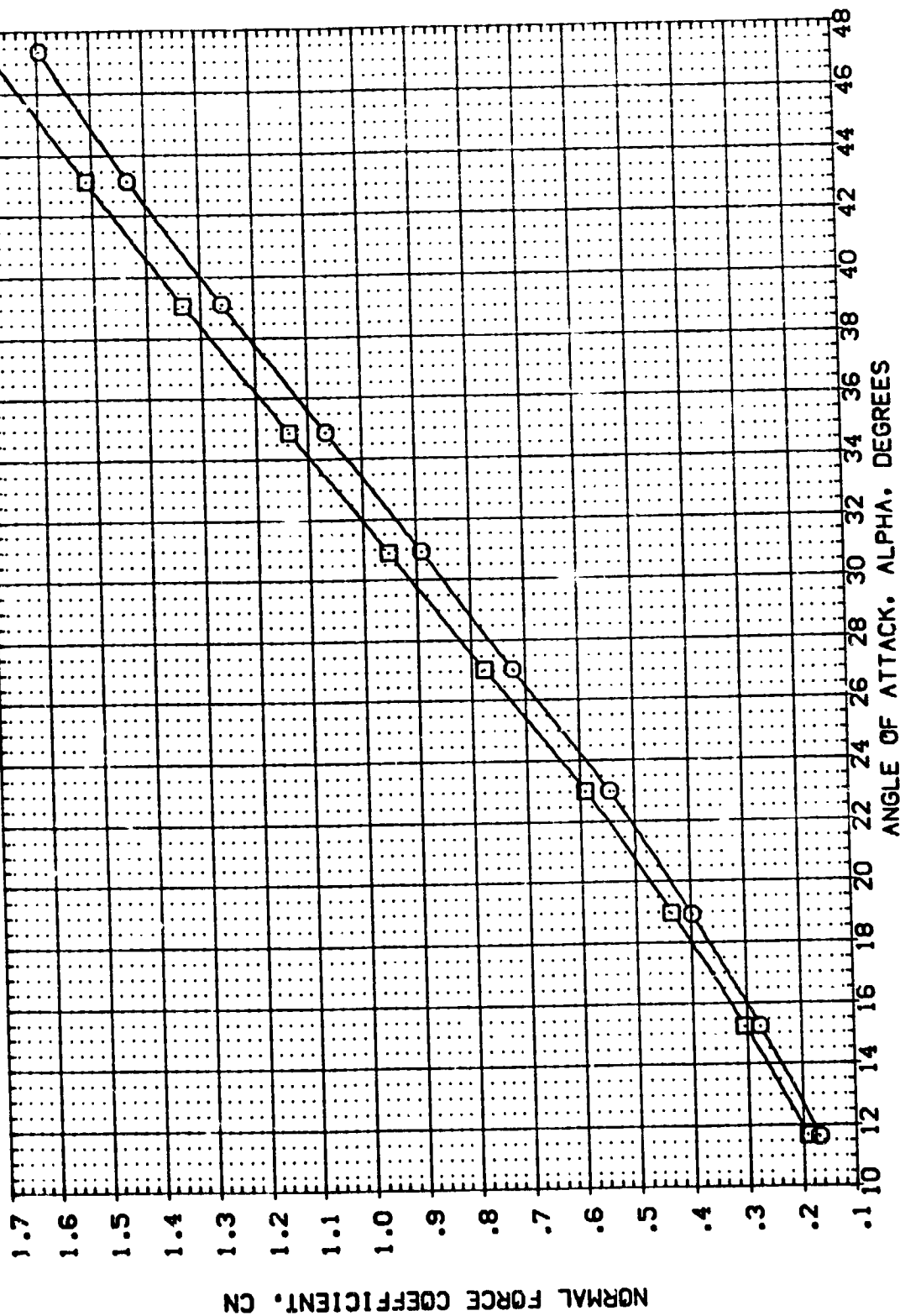


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFO10)	AVES 3.5-176 0487 140 A/B 0881TER	0.000	55.000	16.300	3.000	SREF 2690.0000 SO.FT.
(BEFO11)	AVES 3.5-176 0487 140 A/B 0881TER	10.000	55.000	16.300	3.000	LREF 1230.3000 IN.
						BREF 936.6800 IN.
						XREF 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

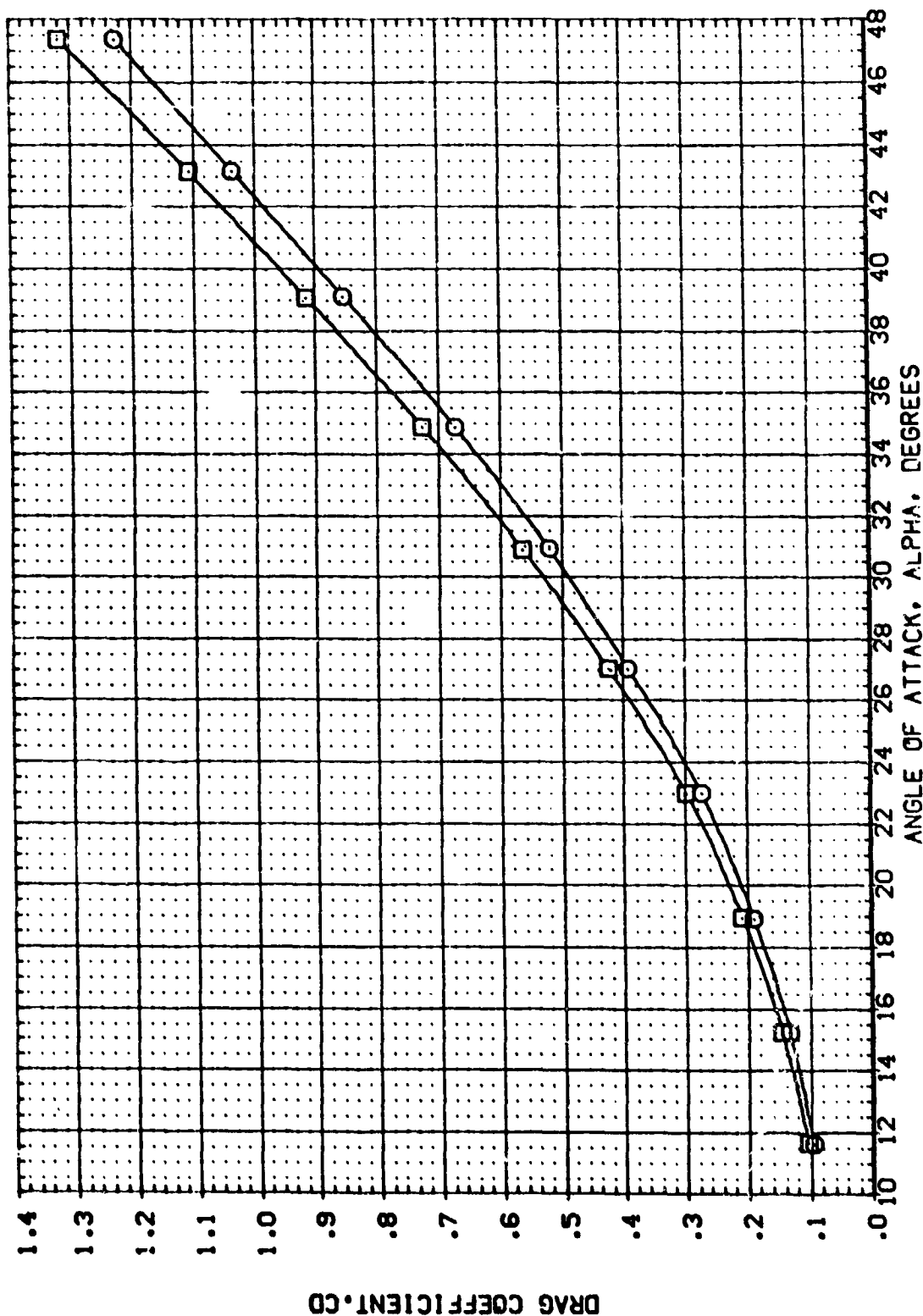


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

(A) MACH = 7.32

DATA SET	SWP/L	CONF/3URATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFO10)	WES 3.5-176	0A87 140 A/B ORBITER	10.000	95.000	16.300	3.000	SREF 2690.0000 SO.FT.
(BEFO11)	WES 3.5-176	0A87 140 A/B ORBITER	10.000	55.000	16.300	3.000	LREF 1250.3000 IN.
							BREF 936.6800 IN.
							XREF 1076.4800 IN.
							YREF .0000 IN.
							ZREF .0000 IN.
							SCALE .0150

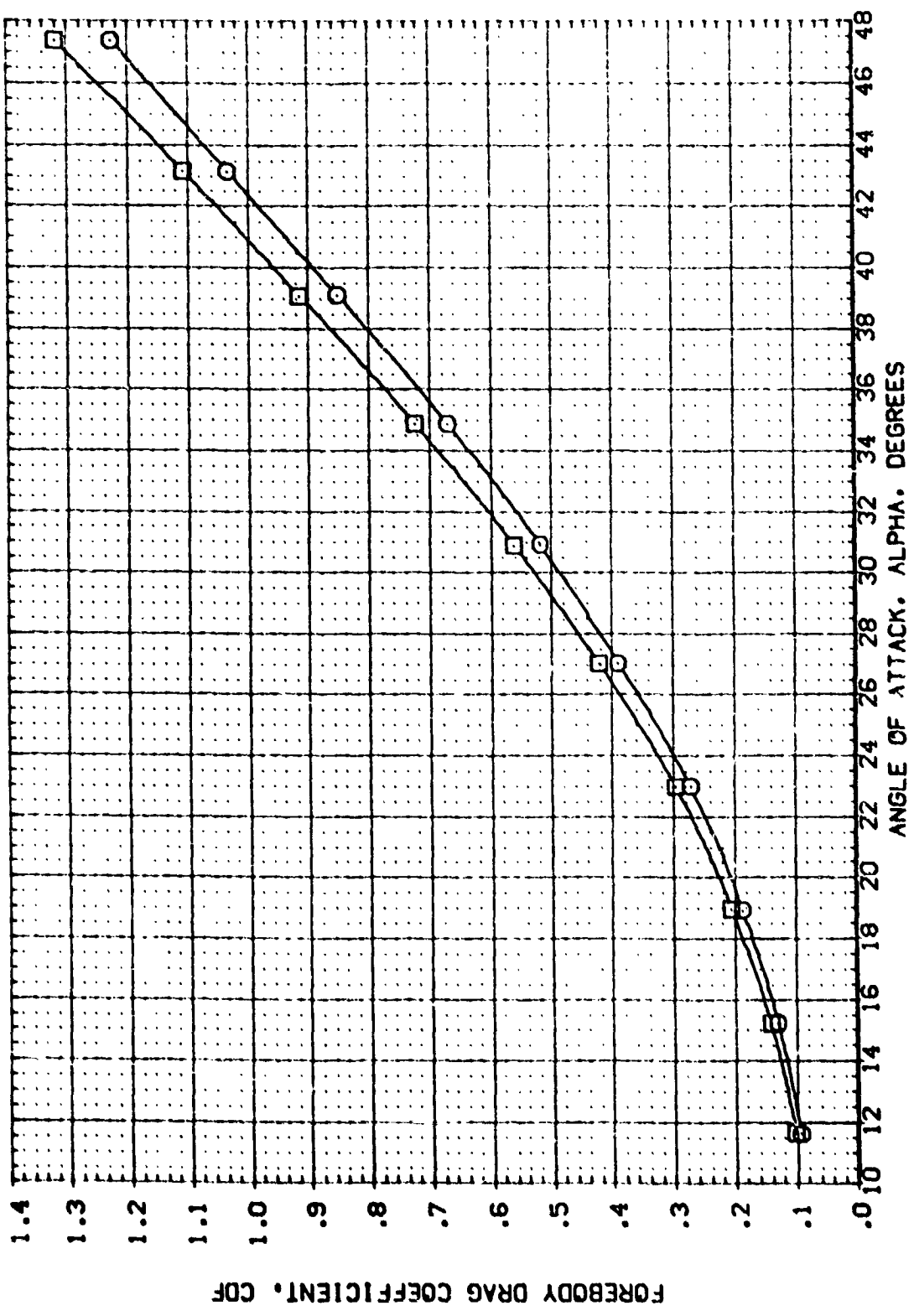


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		REFERENCE INFORMATION	
(BEF010)	□	AMES 3.5-176	QAB7 140 A/B ORBITER	SREF	2690.0000
(BEF011)	○	AMES 3.5-176	QAB7 140 A/B ORBITER	LREF	1290.3000
				BREF	936.6800
				XPRP	1076.4800
				YPRP	.0000
				ZPRP	375.0000
				SCALE	.0150

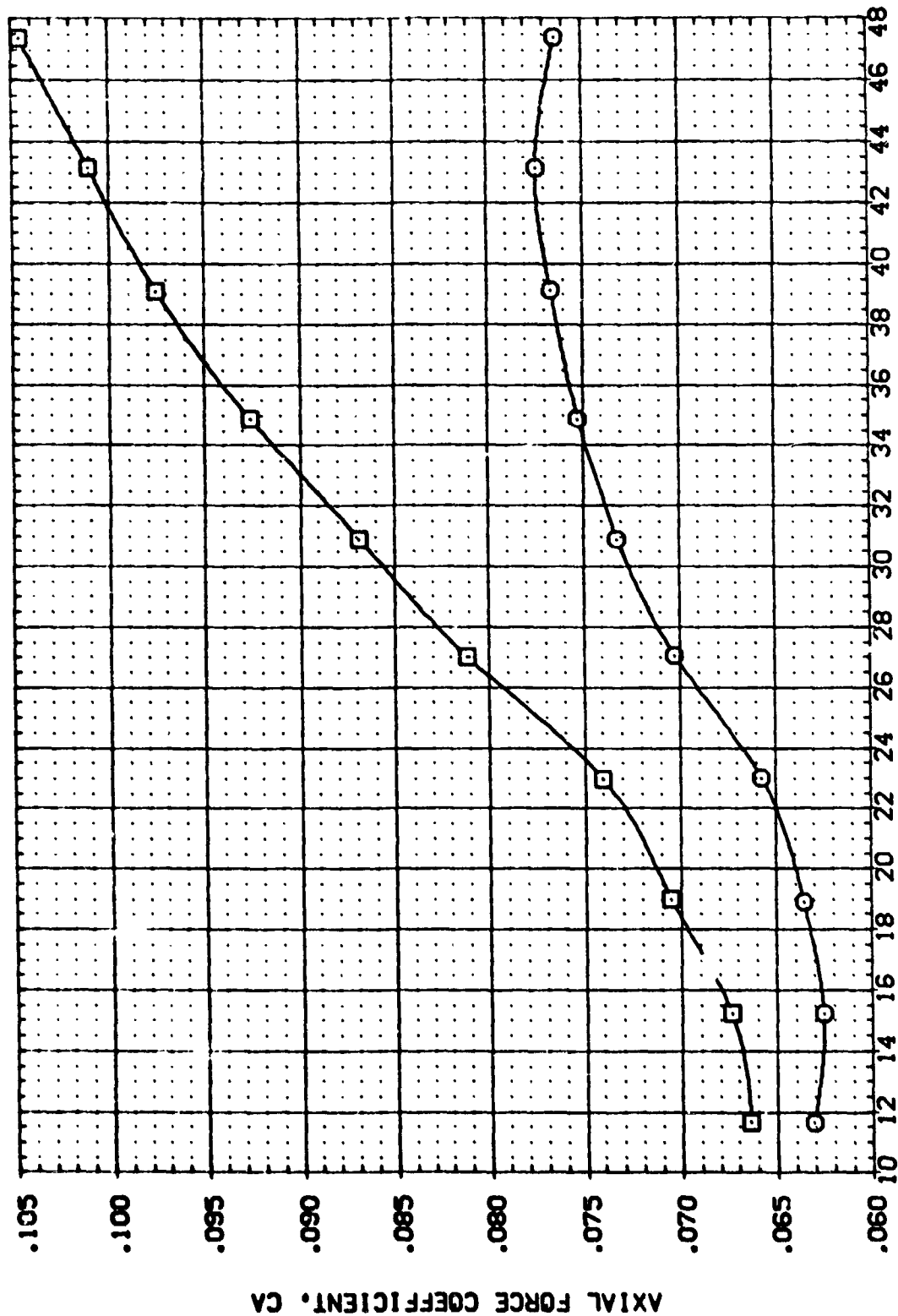


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		ELEVON		SPDRK		BDFLAP		RN/L		REFERENCE INFORMATION	
(BE7010)	□	AVES 3.5-176	DA87 140 A/B ORBITER	.000	55.000	16.300	3.000	SREF	2690.0000	50. FT.			
(BE7011)	□	AVES 3.5-176	DA87 140 A/B ORBITER	10.000	55.000	16.300	3.000	LRP	1290.3000	IN.			
								BRP	936.6800	IN.			
								XPRP	1076.4800	IN.			
								YPRP	375.0000	IN.			
								ZPRP	375.0000	IN.			
								SCALE	.0150	SCALE			

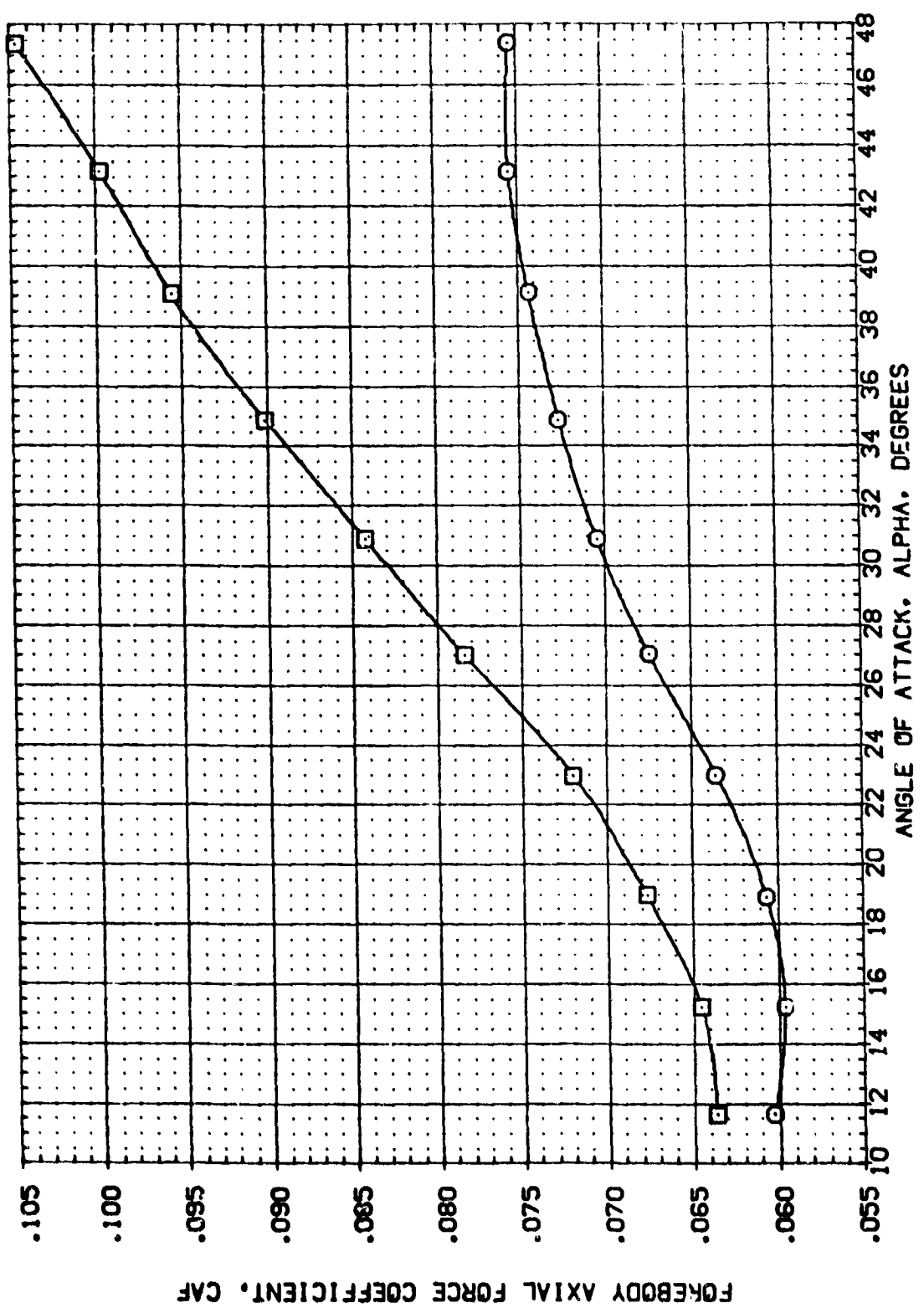
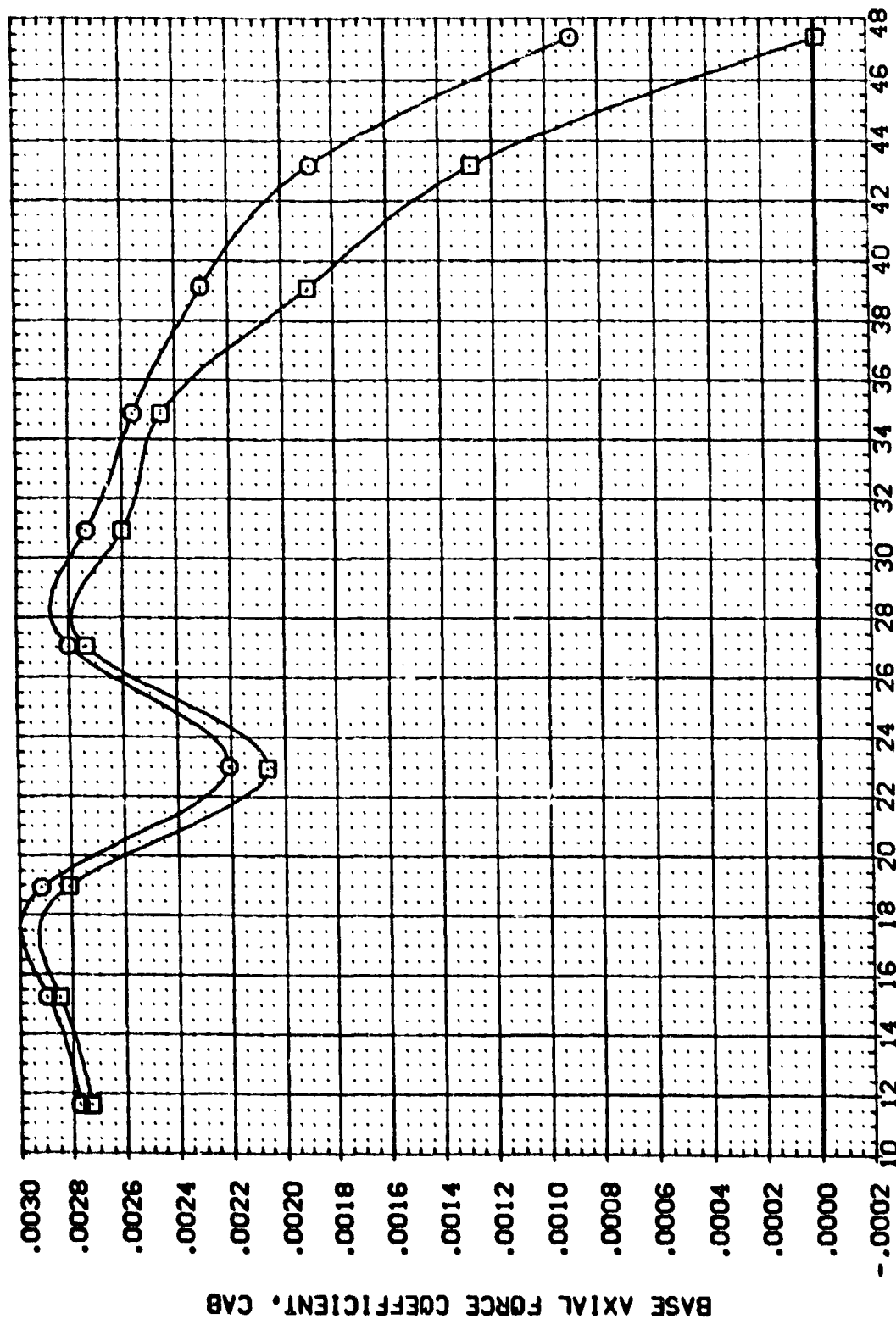


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3
 (A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		ELEVON		SPDRK		BDFLAP		PVAL		REFERENCE INFORMATION	
(BEF010)	□	AMES 3.5-176	0A87	140	A/B	0.000	55.000	16.300	3.000	SREF	2690.0000	50. FT.	
(BEF011)	□	AMES 3.5-176	0A87	140	A/B	10.000	55.000	16.300	3.000	LREF	1290.3000	IN.	
										BREF	936.6800	IN.	
										XREF	1076.4800	IN.	
										YREF	.0000	IN.	
										ZREF	375.0000	IN.	
										SCALE	.0150	SCALE	



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		ELEVON		SPORCK		BDFLAP		RN/L		REFERENCE INFORMATION	
(BEF010)	□	AVES 3.5-176	QAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	SREF	2690.0000	50.FT.			
(BEF011)	□	AVES 3.5-176	QAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	LREF	1290.3000	IN.			
								BREF	936.6800	IN.			
								XPRP	1076.4800	IN.			
								YPRP	0.0000	IN.			
								ZPRP	375.0000	IN.			
								SCALE	0.150	SCALE			

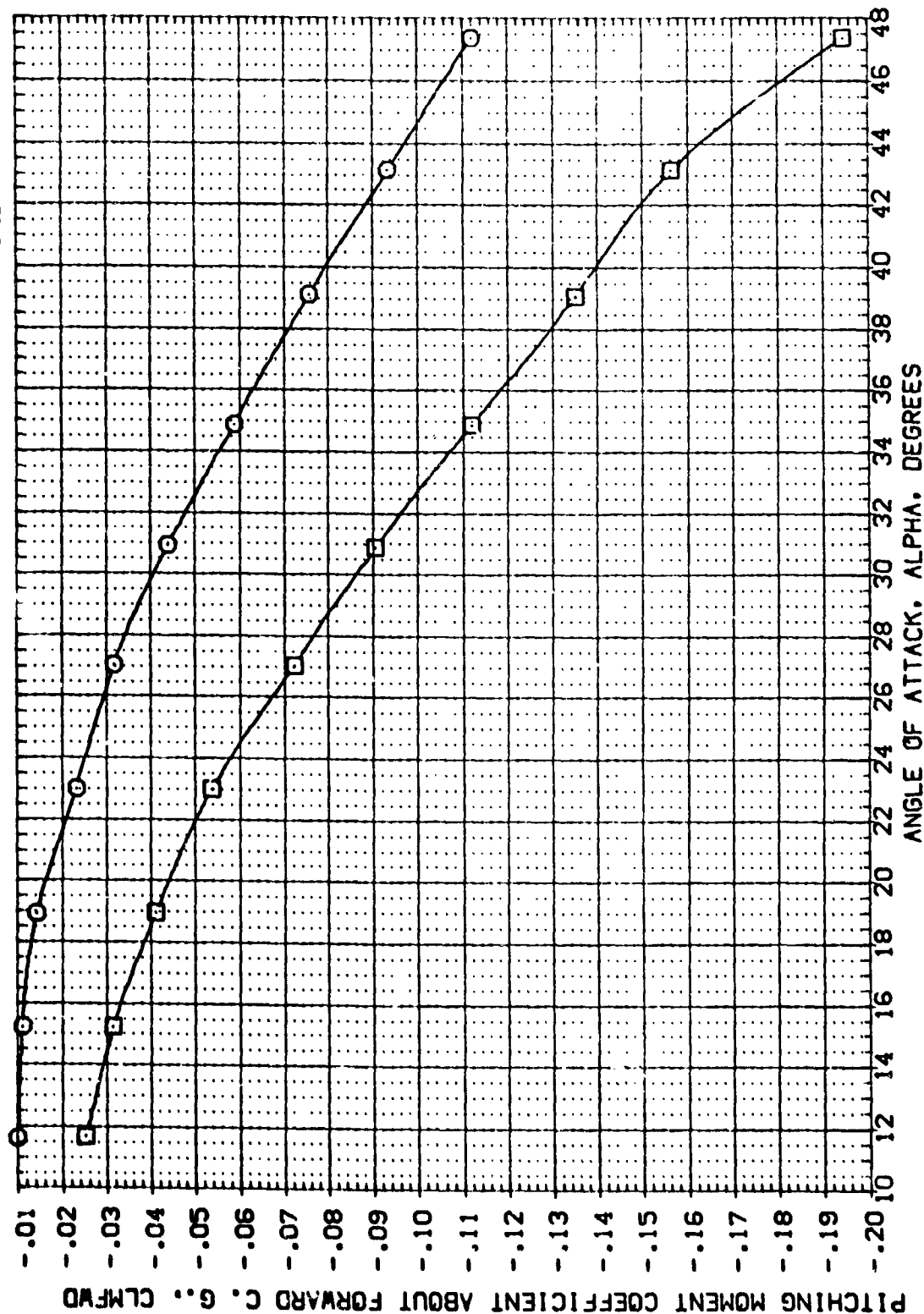


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF010)	AVES 3.5-176 DAB7 140 A/B ORBITER	.000	55.000	16.300	3.000	SREF 2690.0000 SQ.FT.
(BEF011)	AVES 3.5-176 DAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	LREF 1250.3000 IN.
						BREF 936.6800 IN.
						XTRP 1076.4800 IN.
						YTRP .0000 IN.
						ZTRP 375.0000 IN.
						SCALE .0150

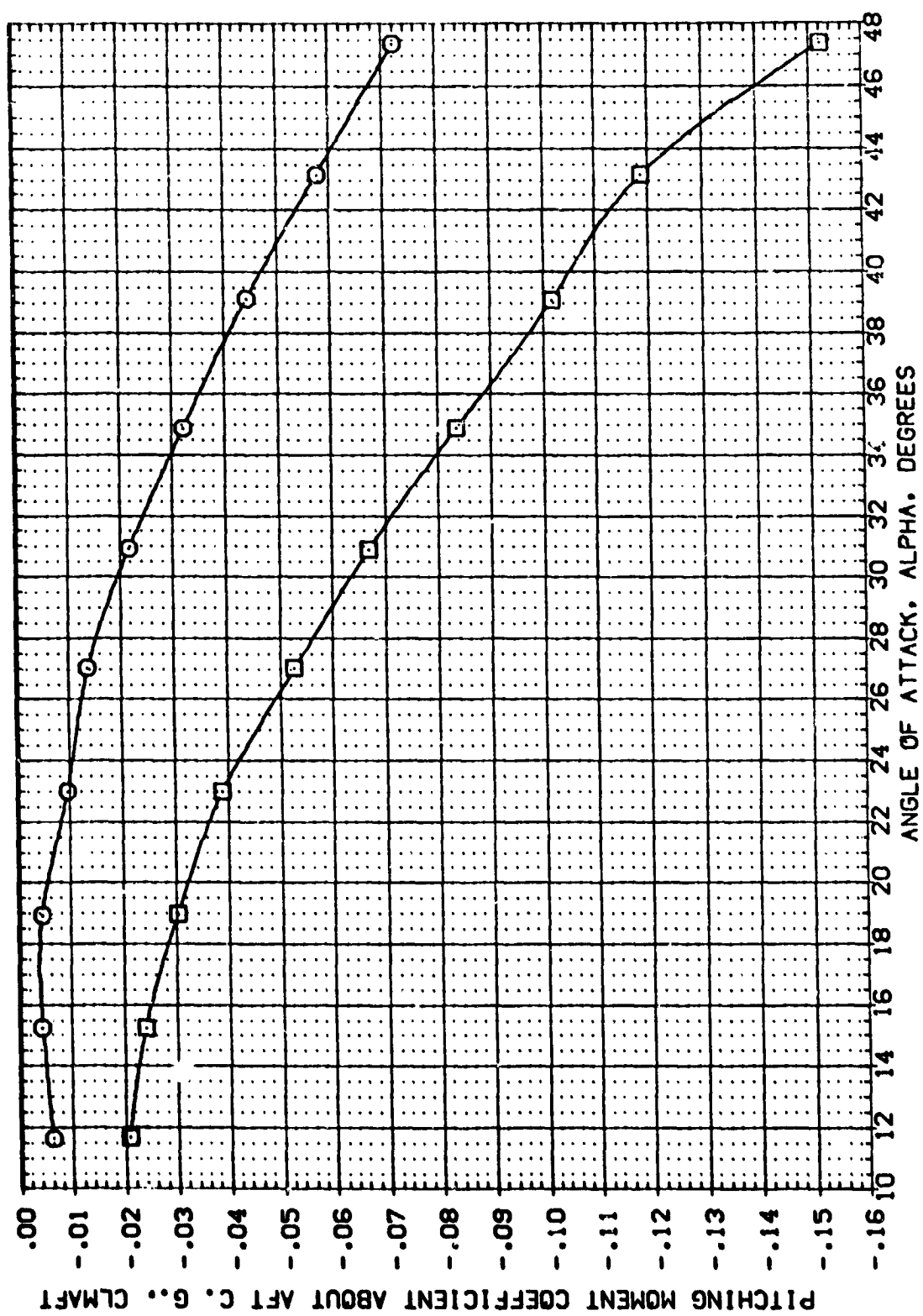


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO10)	AMES 3.5-176 OAB7 140 A/B OAB7ITER	10.000	55.000	16.300	3.000	SREF 2690.0000 SQ. FT.
(BEFO11)	AMES 3.5-176 OAB7 140 A/B OAB7ITER	10.000	55.000	16.300	3.000	LREF 1290.3000 IN.
						BREF 536.6800 IN.
						YREF 1076.4800 IN.
						ZREF .0000 IN.
						SCALE 375.0000 IN.
						SCALE .0150

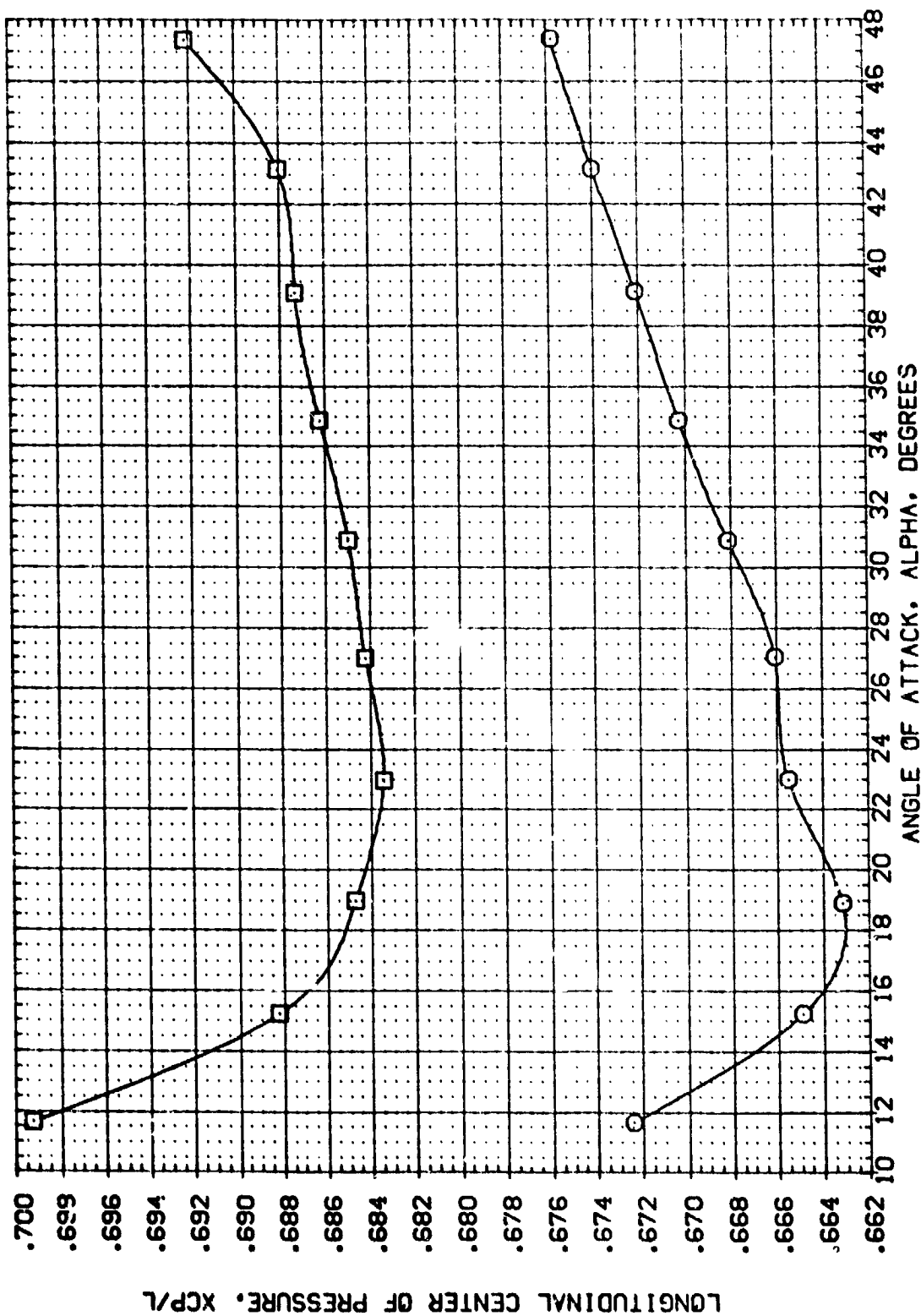


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF010)	AVES 3.5-176 CW87 140 A/B DR81TER	.000	55.000	16.300	3.000	SREF 2690.0000 SQ.FT.
(BEF011)	AVES 3.5-176 CW87 140 A/B DR81TER	10.000	55.000	16.300	3.000	LREF 1290.3000 IN.
						BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

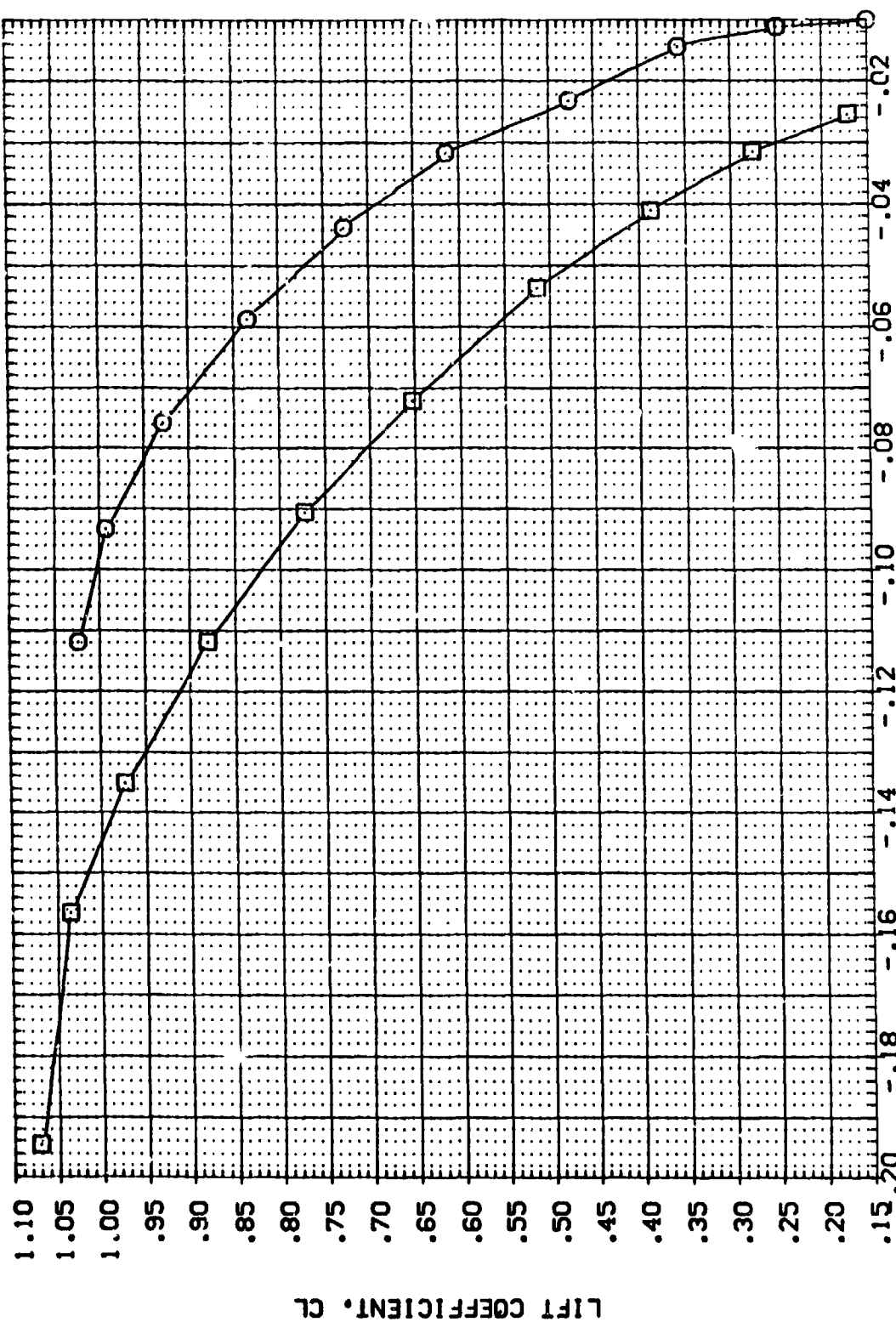


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF010)	AMES 3.5-176 DAG7 140 A/B ORBITER	.000	55.000	16.300	3.000	SREF 2690.0000 SO.FT.
(BEF011)	AMES 3.5-176 DAG7 140 A/B ORBITER	10.000	55.000	16.300	3.000	LREF 1290.3000 IN.
						BREF 936.6800 IN.
						YMRP 1076.4800 IN.
						ZMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150 SCALE

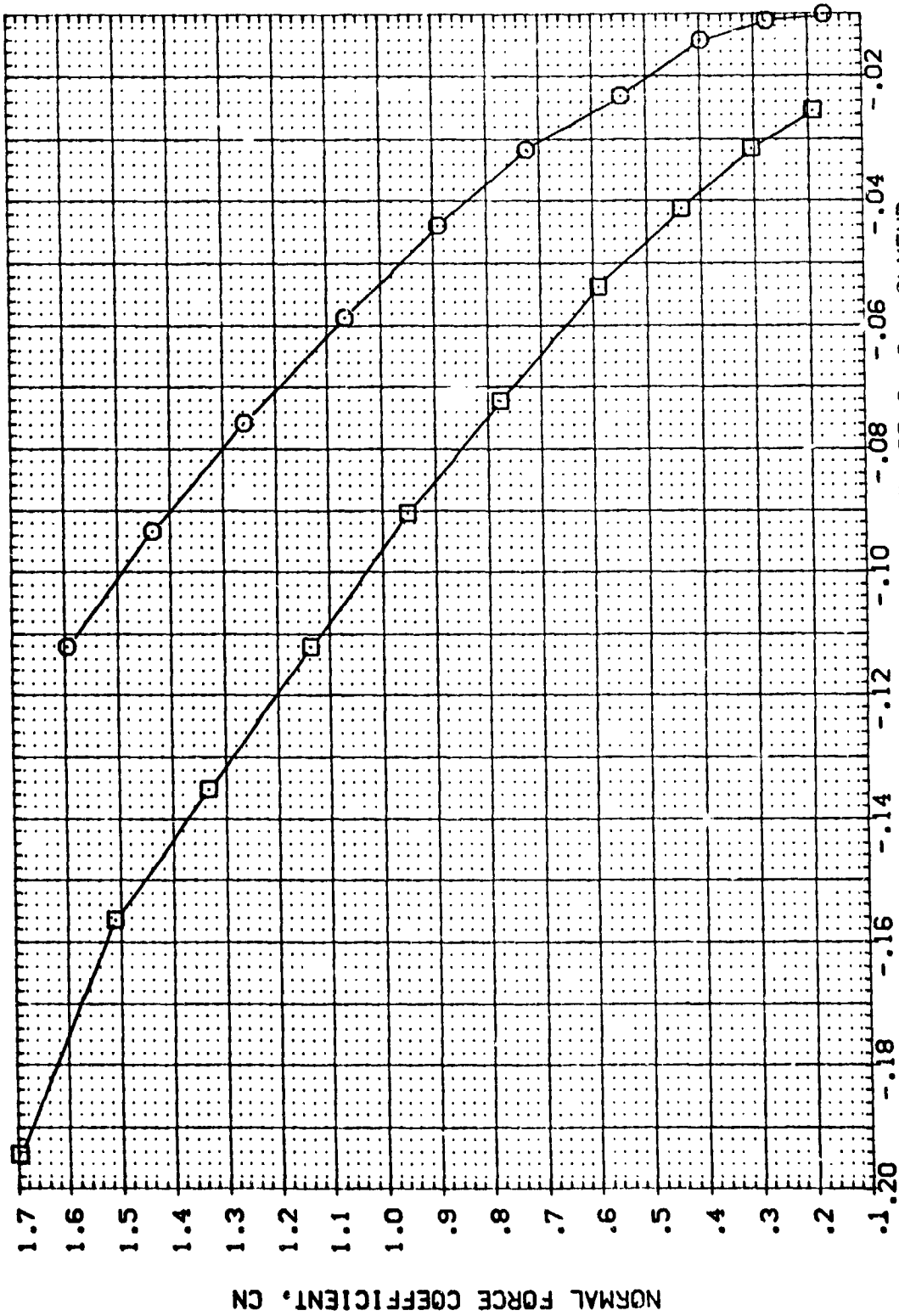


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOILER	BOFLAP	RN/L	REFERENCE INFORMATION
(BFD010)	AMES 3.5-176 DAB7 140 A/B DAB7ITER	.000	55.000	16.300	3.000	SREF 2690.0000 SQ.FT.
(BFD011)	AMES 3.5-176 DAB7 140 A/B DAB7ITER	10.000	55.000	16.300	3.000	LREF 1290.3000 IN.
						BREF 936.6800 IN.
						XPRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

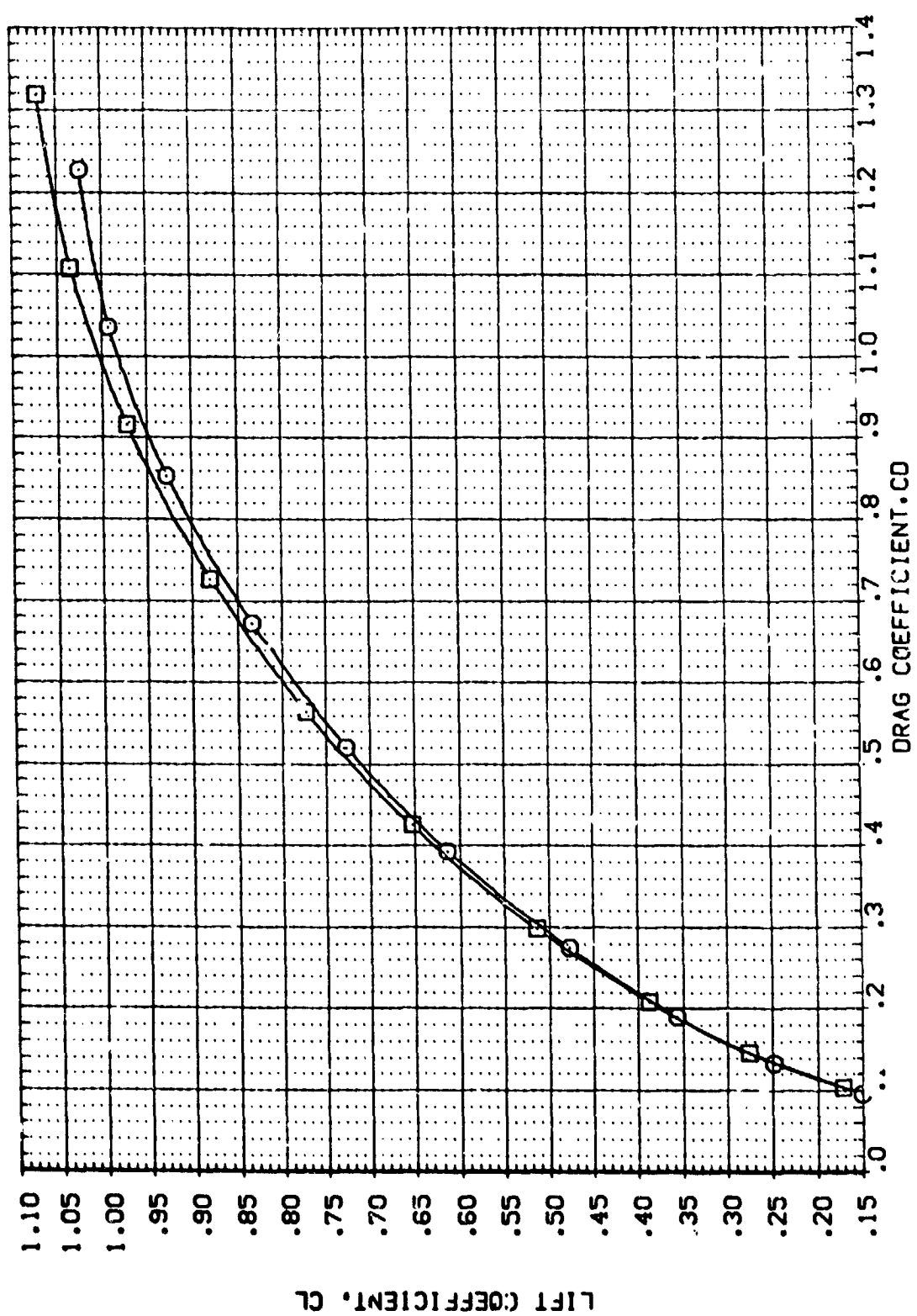
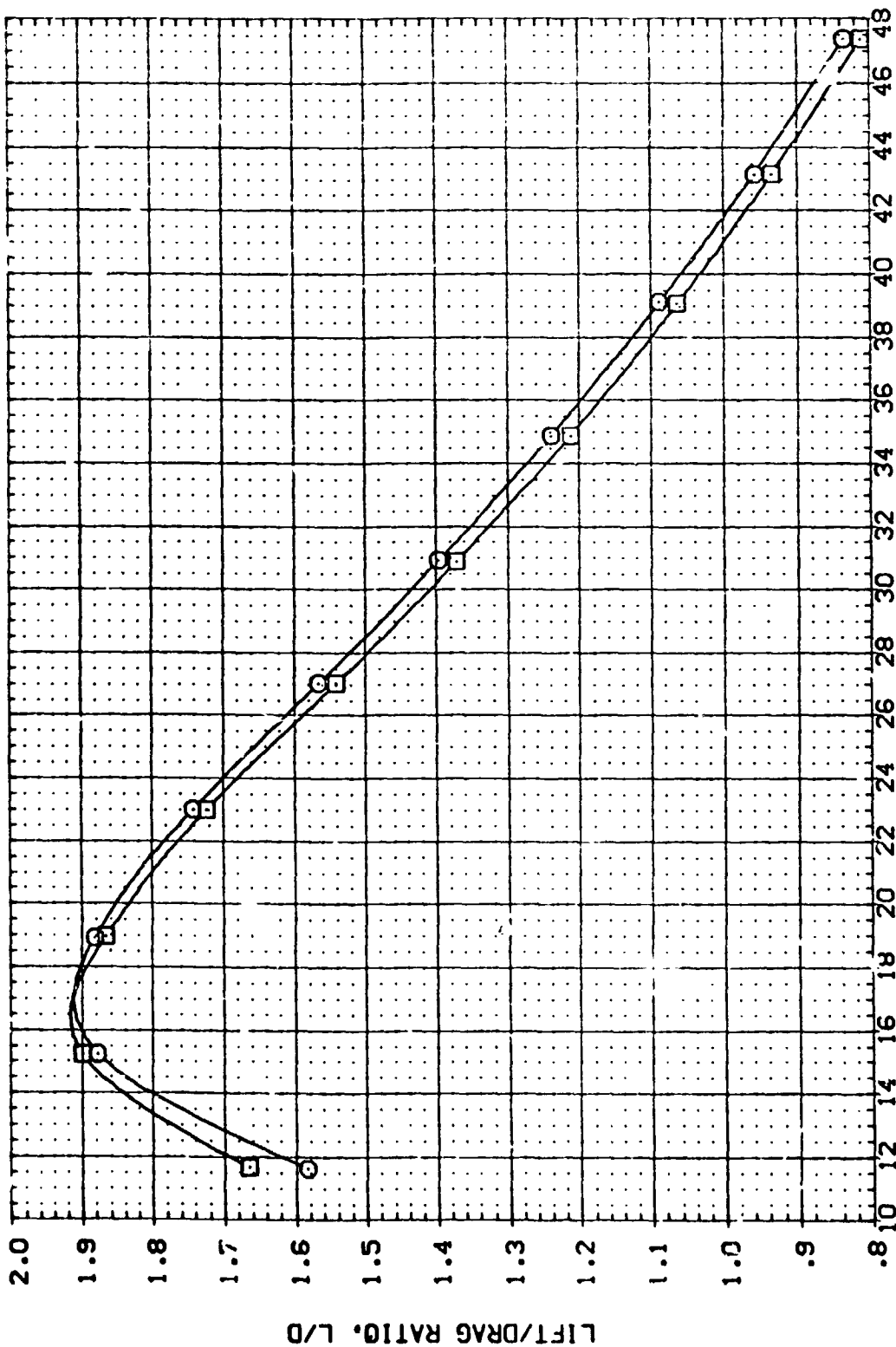


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3
(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		ELEVON		SPDRBK		BDFLAP		RN/L		REFERENCE INFORMATION	
(AEFOL)	(AEFOL)	AKES 3.5-176	QAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	SREF	2690.0000	50. FT.			
(AEFOL)	(AEFOL)	AKES 3.5-176	QAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	LREF	1290.3000	IN.			
								XRREF	936.6300	IN.			
								YMRP	1076.4800	IN.			
								ZMRP	375.0300	IN.			
								SCALE	.0150	SCALE			



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(EEFO11) O	AMES 3.5-176 QAB7 140 A/B ORBITER

DE	SPDRX	BOFLAP	ANAL
10.000	55.000	16.300	3.000

REFERENCE INFORMATION	
SREF	2690.0000 SO.FT.
LREF	1290.3000 IN.
BRF	936.6000 IN.
NIREF	1076.4800 IN.
YREF	.0000 IN.
ZREF	375.0000 IN.
SCALE	.0150 SCALE

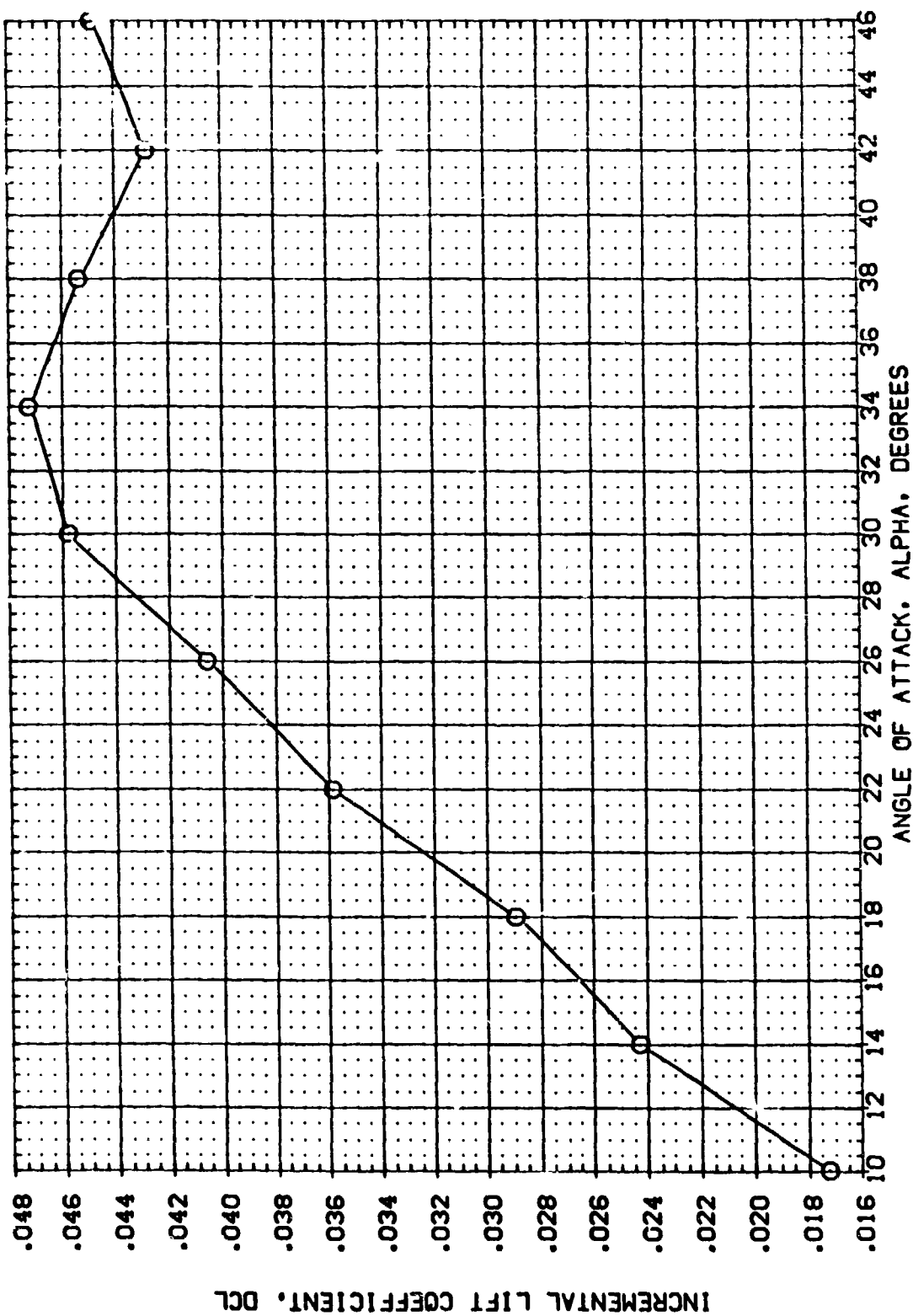


FIG. 8 ELEVON EFFECTIVENESS, $RN/L=3.0$, $BDELAP=16.3$

[A]MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPORRY	BDFLAP	RN/L	REFERENCE INFORMATION
(EEF011) O	WES 3.5-176 CAS7 140 A/B ORBITER	10.000	55.000	16.300	3.000	SREF 2690.0000 SQ. FT.
						LREF 1290.3000 IN.
						BREF 536.6800 IN.
						XPRP 1076.4800 IN.
						YPRP .0000 IN.
						ZPRP 375.0000 IN.
						SCALE .0150

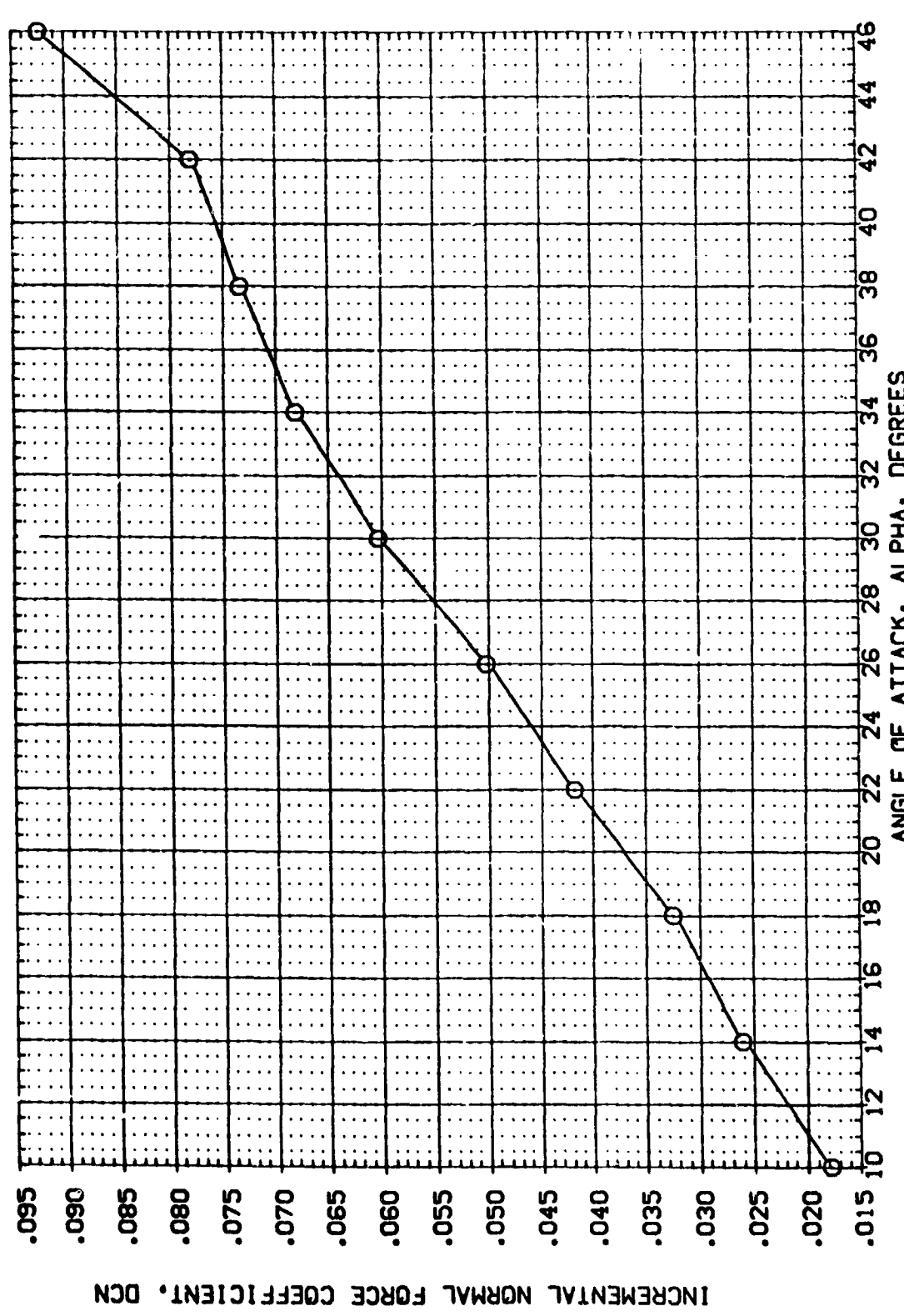


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL: (EEF011) \bigcirc CONFIGURATION DESCRIPTION: ARES 3.5-176 OA87 140 A/B ORBITER

DE: 10.000 SPOBRK: 55.000 BOFLAP: 16.300 RN/L: 3.000

REFERENCE INFORMATION:

	SRF	2690.0000	SO.FT.
LREF	1290.3000	IN.	
BREF	936.6800	IN.	
XMRP	1076.4800	IN.	
YMRP	.0000	IN.	
ZMRP	375.0000	IN.	
SCALE	.0150	IN.	

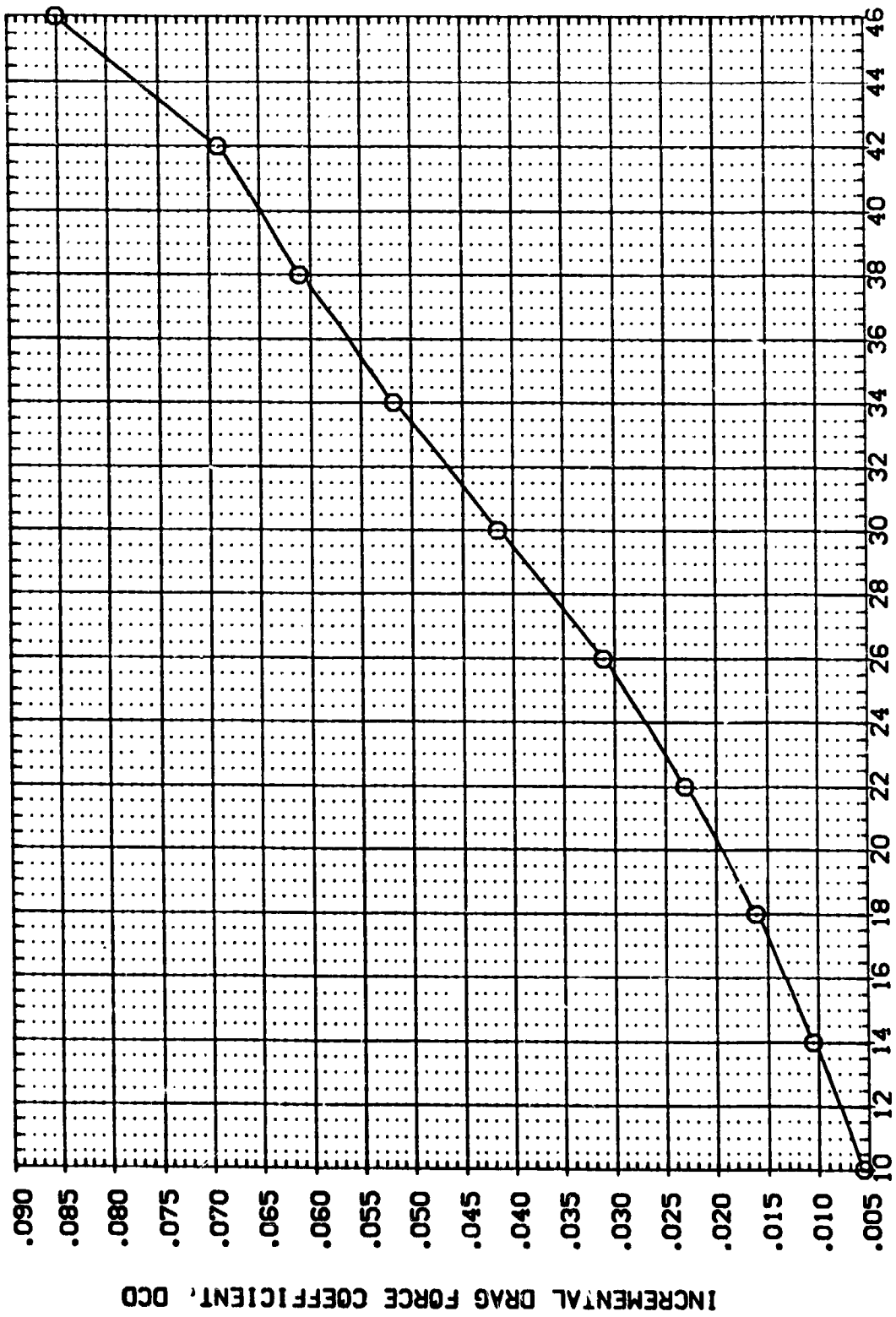


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL CONFIGURATION DESCRIPTION
(EEF011) O ARES 3.5-176 CAB7 140 A/B ORBITER

DE 10.000 SPDRK 55.000 BOFLAP 16.300 RN/L 3.000

REFERENCE INFORMATION
SREF 2650.0000 50. FT.
LREF 1250.3000 IN.
BREF 936.6800 IN.
XMRP 1076.4800 IN.
YMRP 375.0000 IN.
ZMRP 375.0000 IN.
SCALE .0150

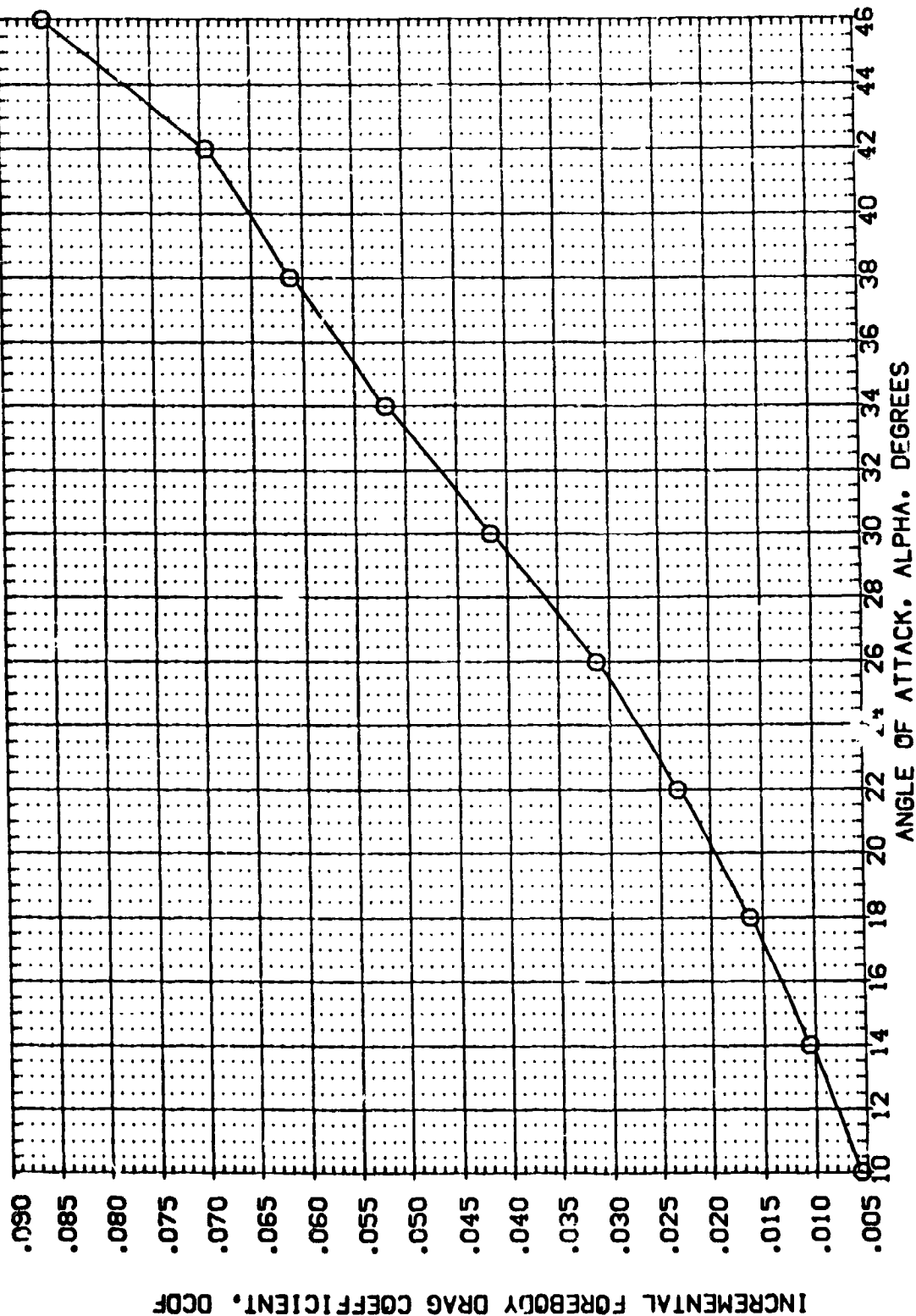


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL: (EEF011) \bigcirc CONFIGURATION DESCRIPTION: ARES 3.5-176 3A87 140 A/B ORBITER

DE: 10.000 SPDRY: 55.000 BOFLAP: 16.300 RN/L: 3.000

REFERENCE INFORMATION

	REF	SO. FT.
SREF	2690.0000	IN.
LREF	1290.3000	IN.
BREF	936.6800	IN.
XTRP	1076.4800	IN.
YTRP	.0000	IN.
ZTRP	375.0000	IN.
SCALE	.0150	SCALE

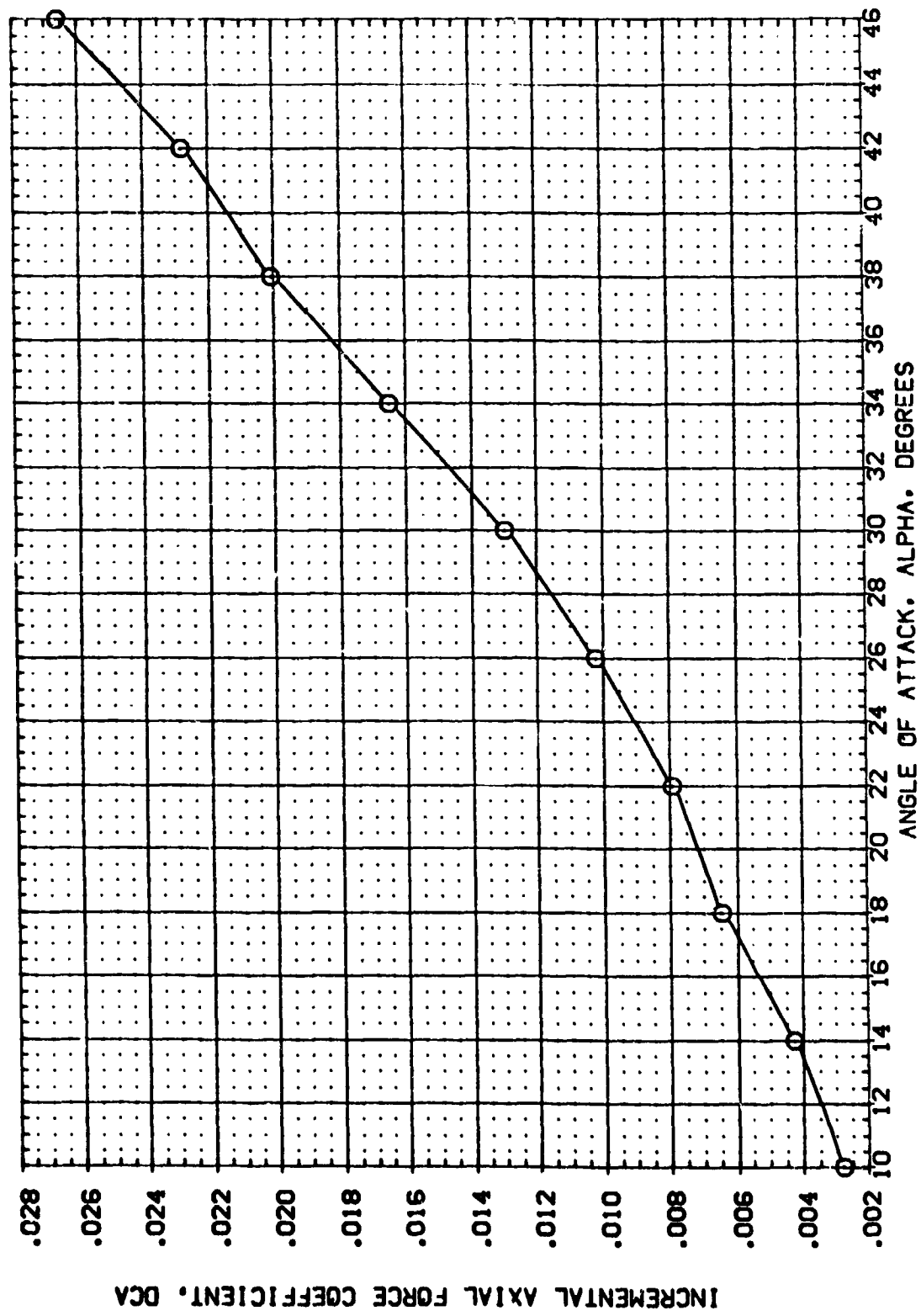


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL: (EEF011) ○ ARES 3.5-176 0A87 140 A/B ORBITER

DE: 10.000 SPDRK: 55.000 BDFLAP: 16.300 RN/L: 3.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	1290.3000	IN.
BREF	936.6800	IN.
XRRP	1076.4800	IN.
YRRP	.0000	IN.
ZRRP	375.0000	IN.
SCALE	.0150	SCALE

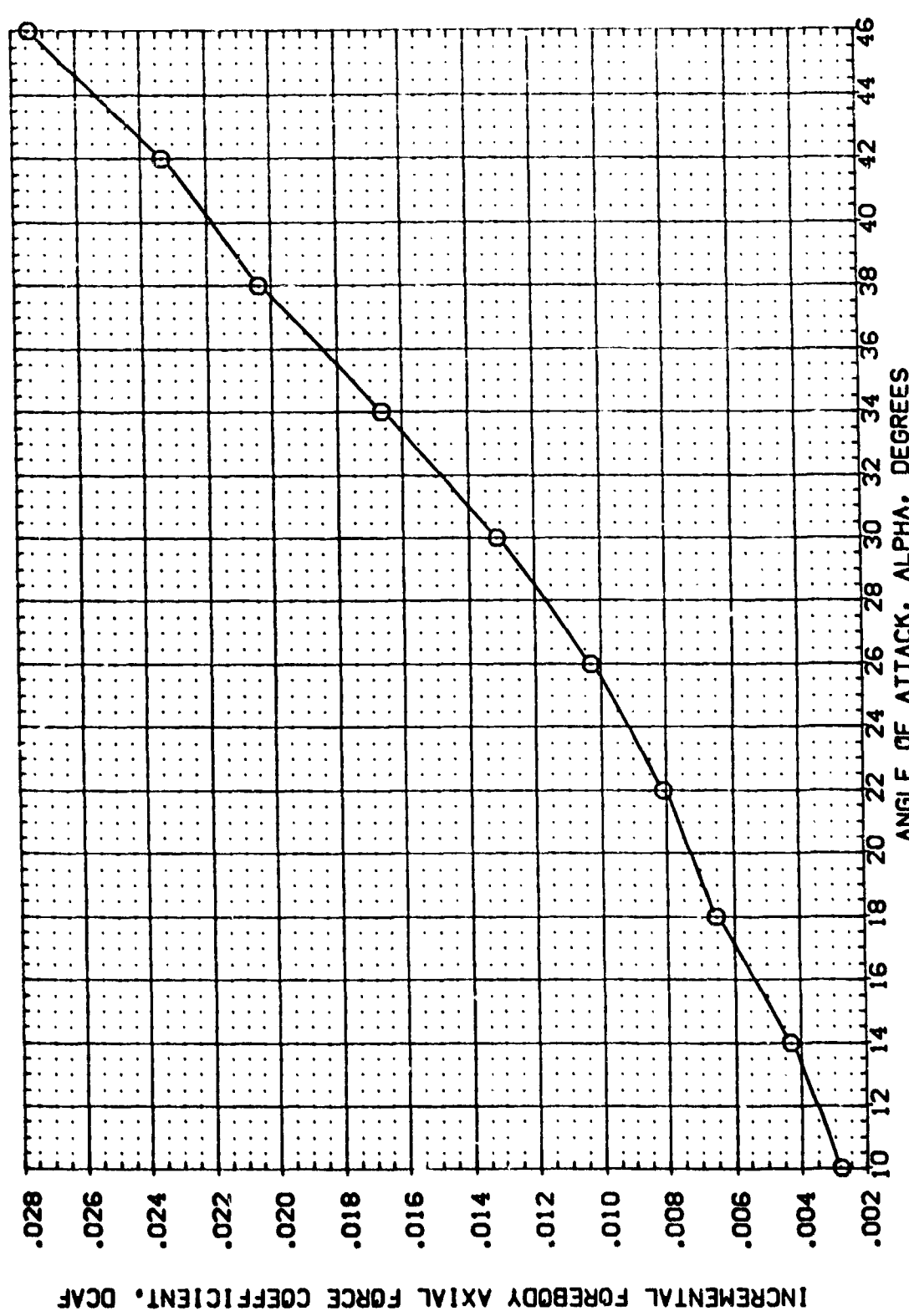


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL: (EEF011) \bigcirc ARES 3.5-176 QAB7 140 A/B ORBITER

CONFIGURATION DESCRIPTION: DE 10.000 SPOBRK 55.000 BOFLAP 16.300 RN/L 3.000

REFERENCE INFORMATION: SKREF 2650.0000 SQ.FT. LREF 1250.3000 IN. BREF 936.6800 IN. XREF 1076.4800 IN. YREF 0.000 IN. ZREF 375.0000 IN. SCALE .0150

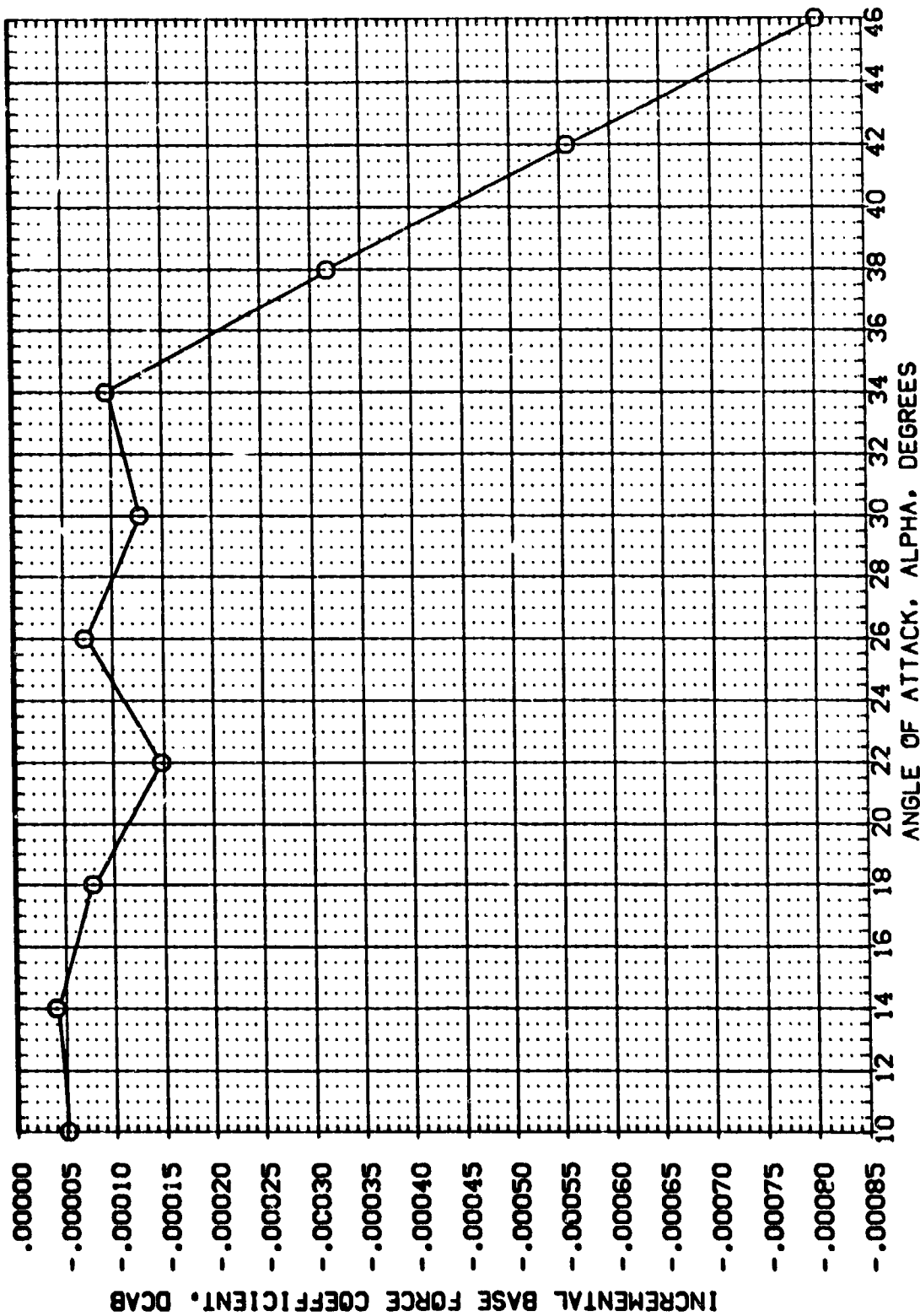


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

(A) MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPDRK	BOFLAP	RN/L	REFERENCE INFORMATION
(E0111)	○ AHS 3.5-176 0487 140 A/B ORBITER	10.000	55.000	16.300	3.000	SREF 2690.0100 50.FT. LREF 1290.3000 IN. BREF 936.6800 IN. XMRP 1076.4800 IN. YMRP .0000 IN. ZMRP 375.0000 IN. SCALE .0150 SCALE

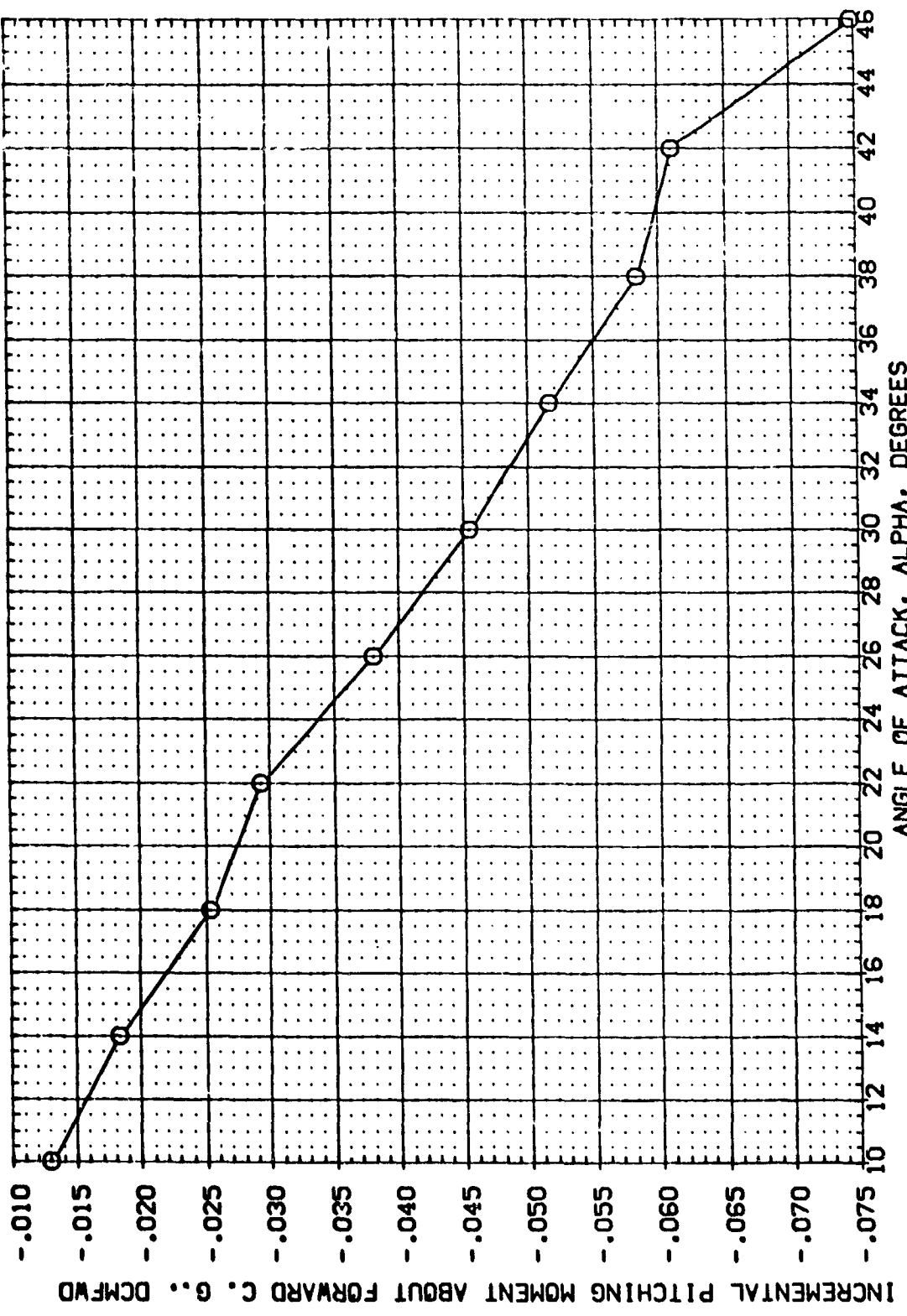
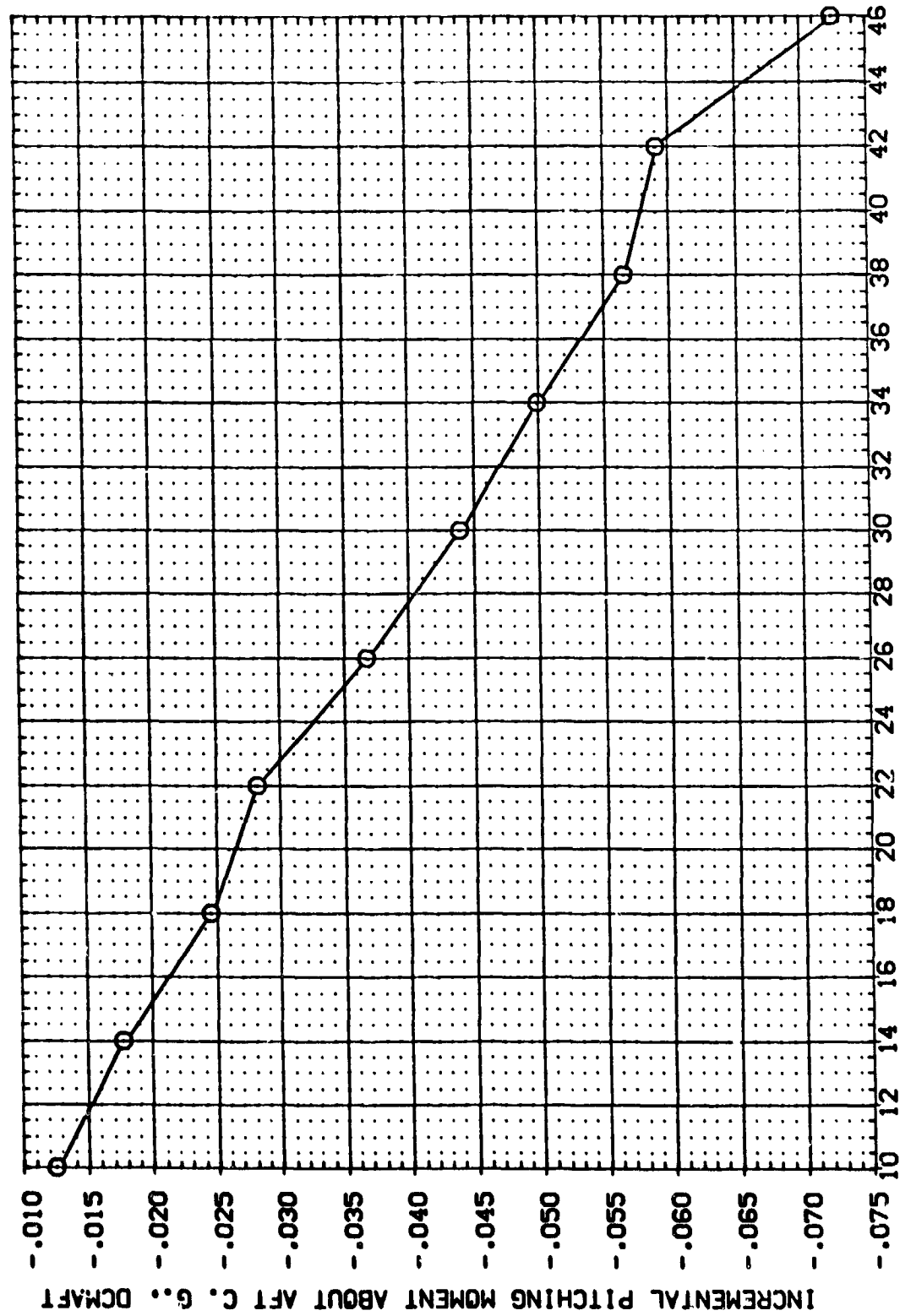


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

(A) MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		DE		SPDRK		BDFLAP		RN/L		REFERENCE INFORMATION	
(EEF011) O		AVES 3.5-176 0487 140 A/B ORBITER		10.000		55.000		16.300		3.000		SREF 2690.0000 SO.FT. LREF 1290.3000 IN. BREF 936.6800 IN. YPRP 1076.4800 IN. ZPRP 375.0000 IN. SCALE .0150 SCALE	



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(A)MACH = 7.32

AMES 3.5-176 0A87 140 A/B ORBITER (FEF010)

SYMBOL	PARAMETRIC VALUES				DATA SOURCE		REFERENCE INFORMATION	
	ALPHA	MACH	BETA	BOFLAP	ELEVON	FEF010	SREF	SO.FT.
○	10.000	AILRON	.000	BOFLAP	.000	FEF010	1290.3000	IN.
□	20.000	RUDER	.000	SPDRK	.000	FEF010	936.6800	IN.
◇	30.000	RN/L	3.000				1076.4800	IN.
△	40.000						375.0000	IN.
							SCALE	SCALE
							.0150	

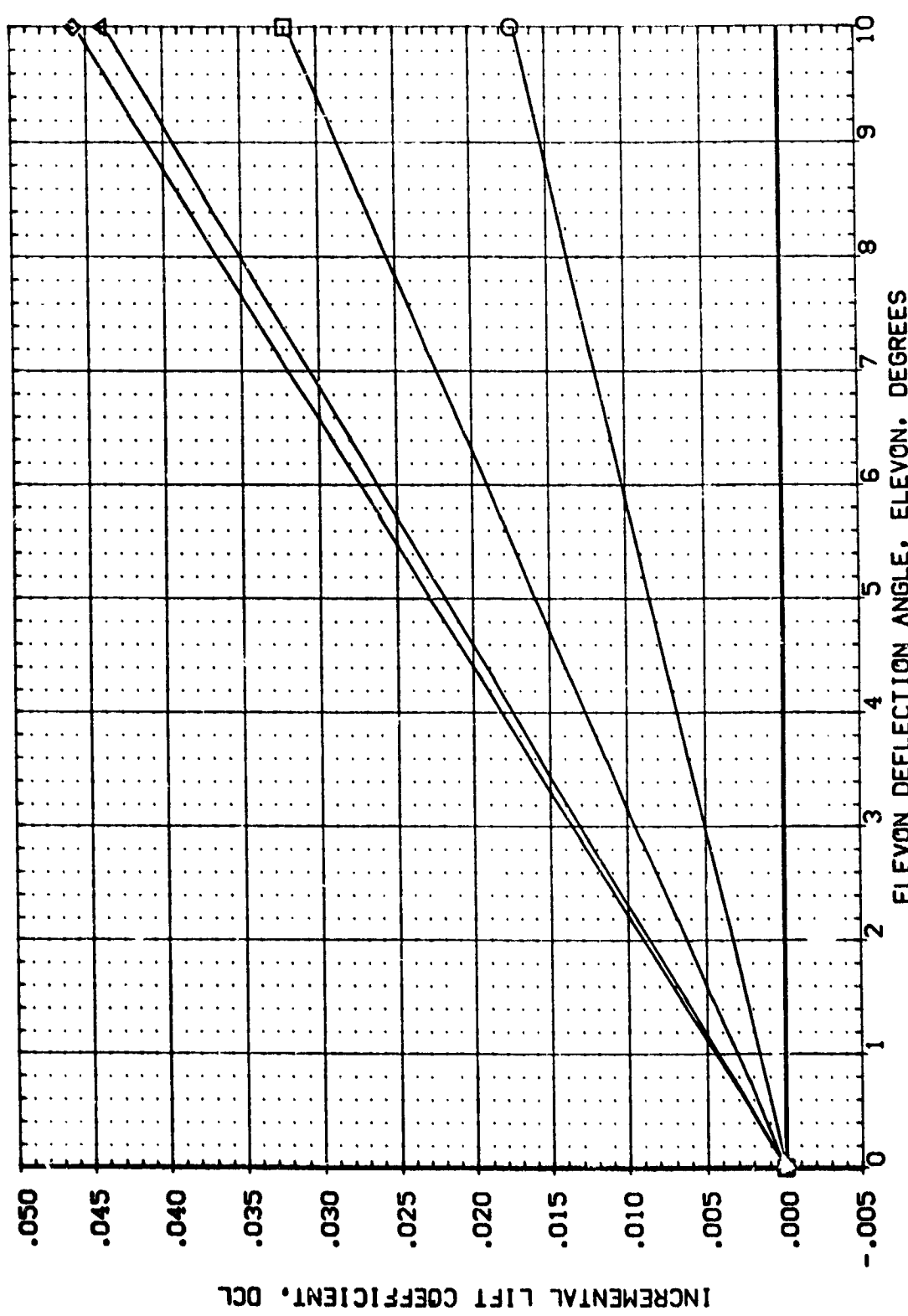
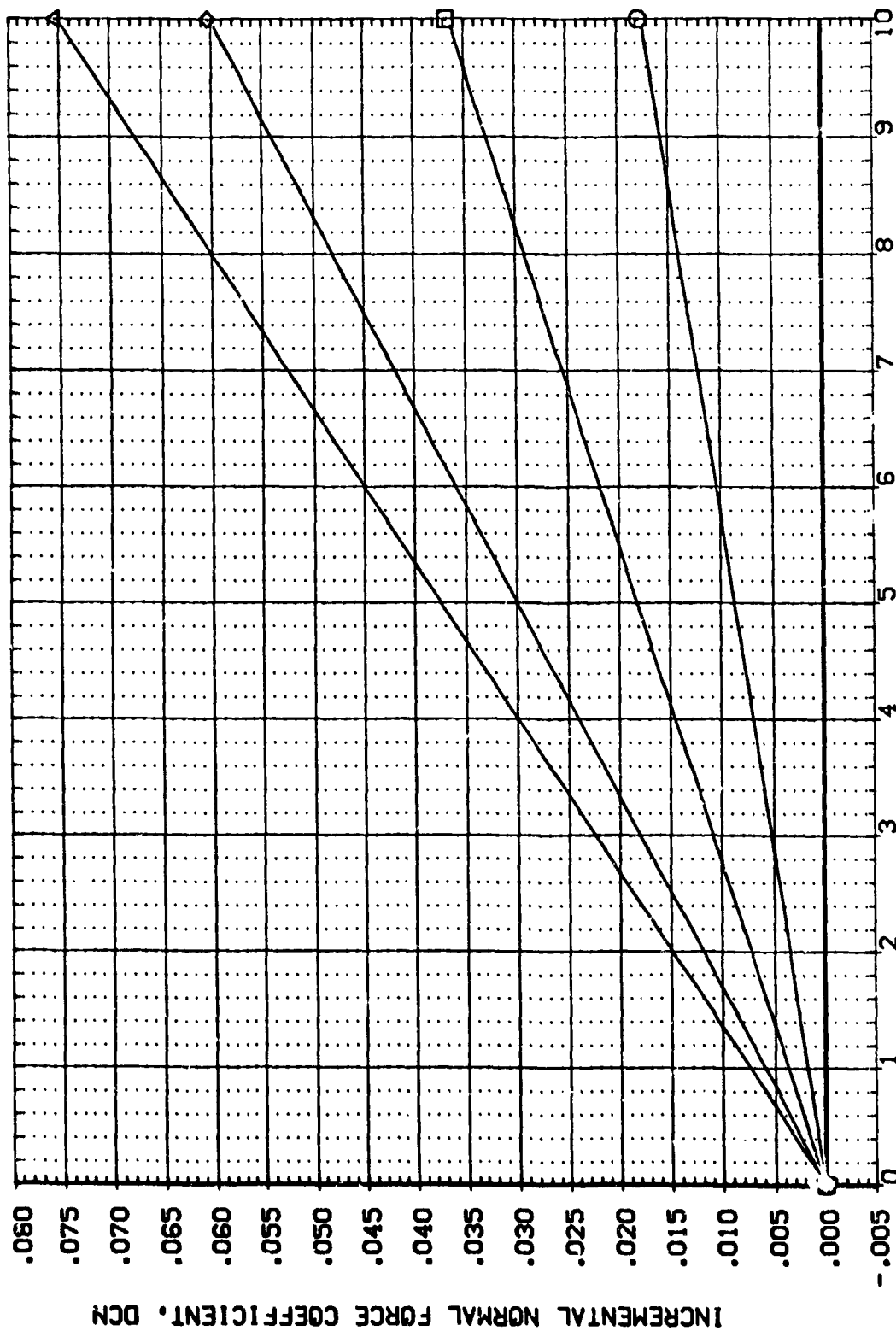


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

AMES 3.5-176 OA87 140 A/B ORBITER (FEF010)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	10.000	7.320	BETA	ELEVON	SREF 2690.0000 SQ.FT.
□	20.000	.000	BOFLAP	FEF011	LREF 1290.3000 IN.
◇	30.000	.000	SPDRK	FEF010	EREF 936.6800 IN.
△	40.000	3.000	RN/L	FEF010	XTRP 1076.4800 IN.
					YTRP .0000 IN.
					ZTRP 375.0000 IN.
					SCALE .0150



ELEVON DEFLECTION ANGLE, ELEVON, DEGREES

FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

(FEF010)

AMES 3.5-176 OA87 140 A/B ORBITER

PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
ALPHA	MACH	BETA	ELEVON	SREF	SQ.FT.
10.000	7.320	.000	.000	LREF	1290.3000
20.000	.000	BDFLAP	FEF010	BREF	936.6800
30.000	.000	SPOBRK	.000	XMRP	1076.4800
40.000	3.000	RN/L	55.000	YMRP	.0000
				ZMRP	375.0000
				SCALE	.0150

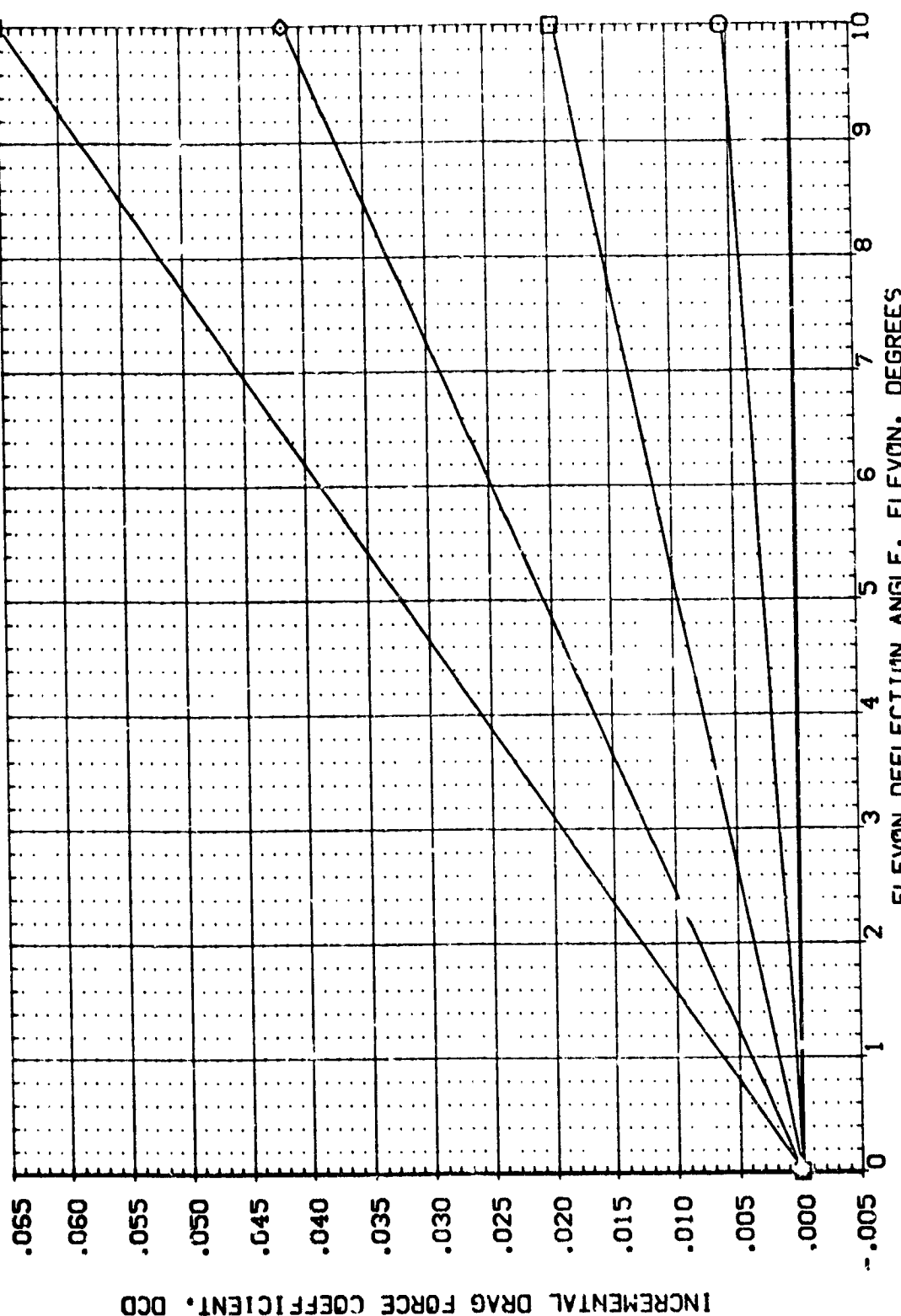


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

AMES 3.5-176 0A87 140 A/B ORBITER (FEF010)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	ELEVON	DATASET	ELEVON	REFERENCE INFORMATION
○	10.000		7.320 BETA	.000 DATASET	.000	FEF011	10.000	SREF 2690.0000 SQ.FT.
□	20.000	AILRON	.000 BDFLAP	16.300 FEF010				LREF 1290.3000 IN.
◇	30.000	RUDDER	.000 SPDBRK	55.000				BREF 936.6800 IN.
△	40.000	RN/L	3.000					XREF 1076.4300 IN.
								YREF 375.0000 IN.
								ZREF 375.0000 IN.
								SCALE .0150

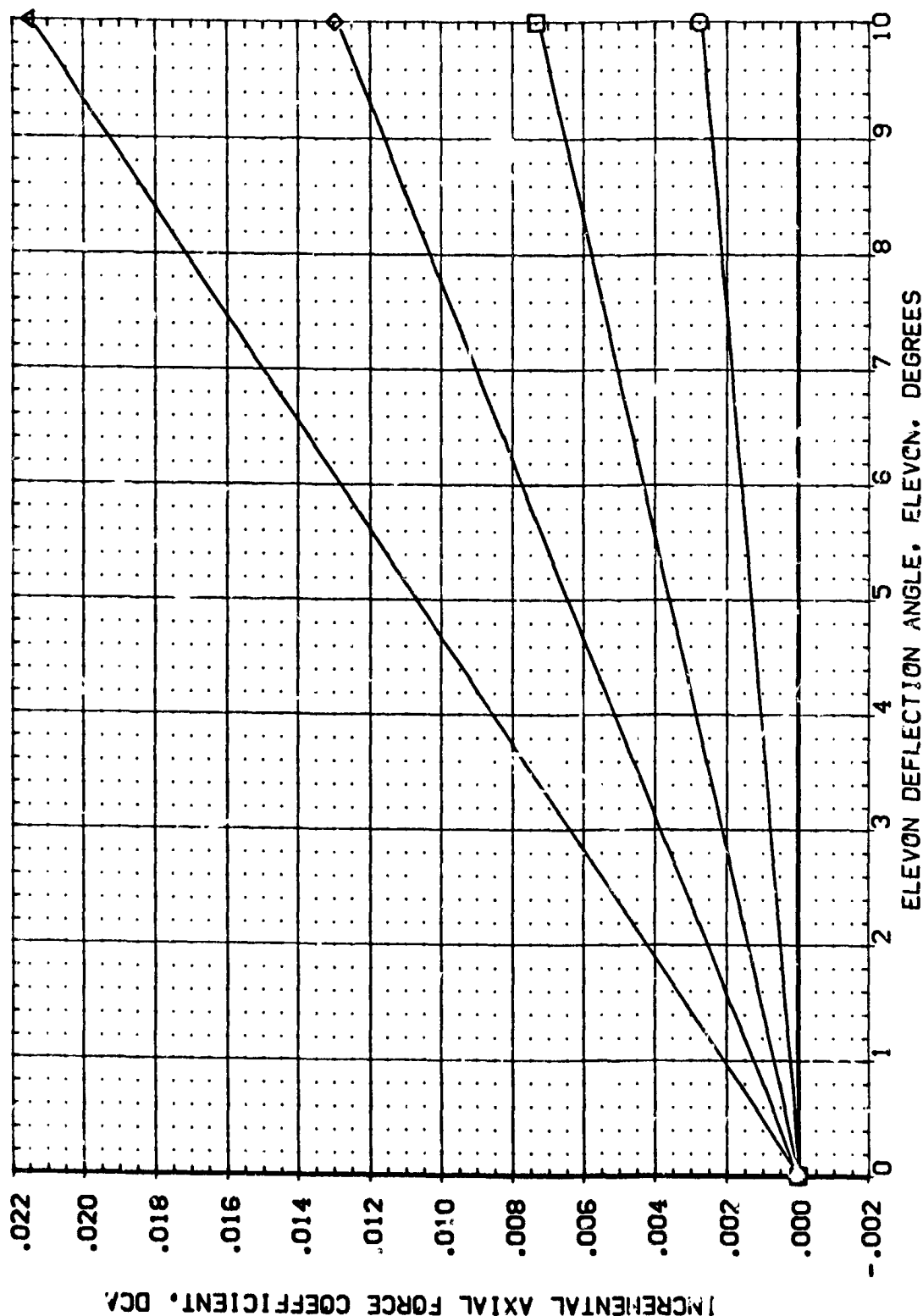


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(FEFJ1UJ)

AMES 3.5-176 C87 140 A/B ORBITER

PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
ALPHA	MACH	.000	FEVON	2690.0700	50. FT.
10.000	7.320	.000	FEVON	1290.3.70	IN.
20.000	.000	.000	FEVON	936.6600	IN.
30.000	.000	.000	FEVON	1076.4800	IN.
40.000	.000	.000	FEVON	375.0000	IN.
	3.000	.000	FEVON	.0150	SCALE

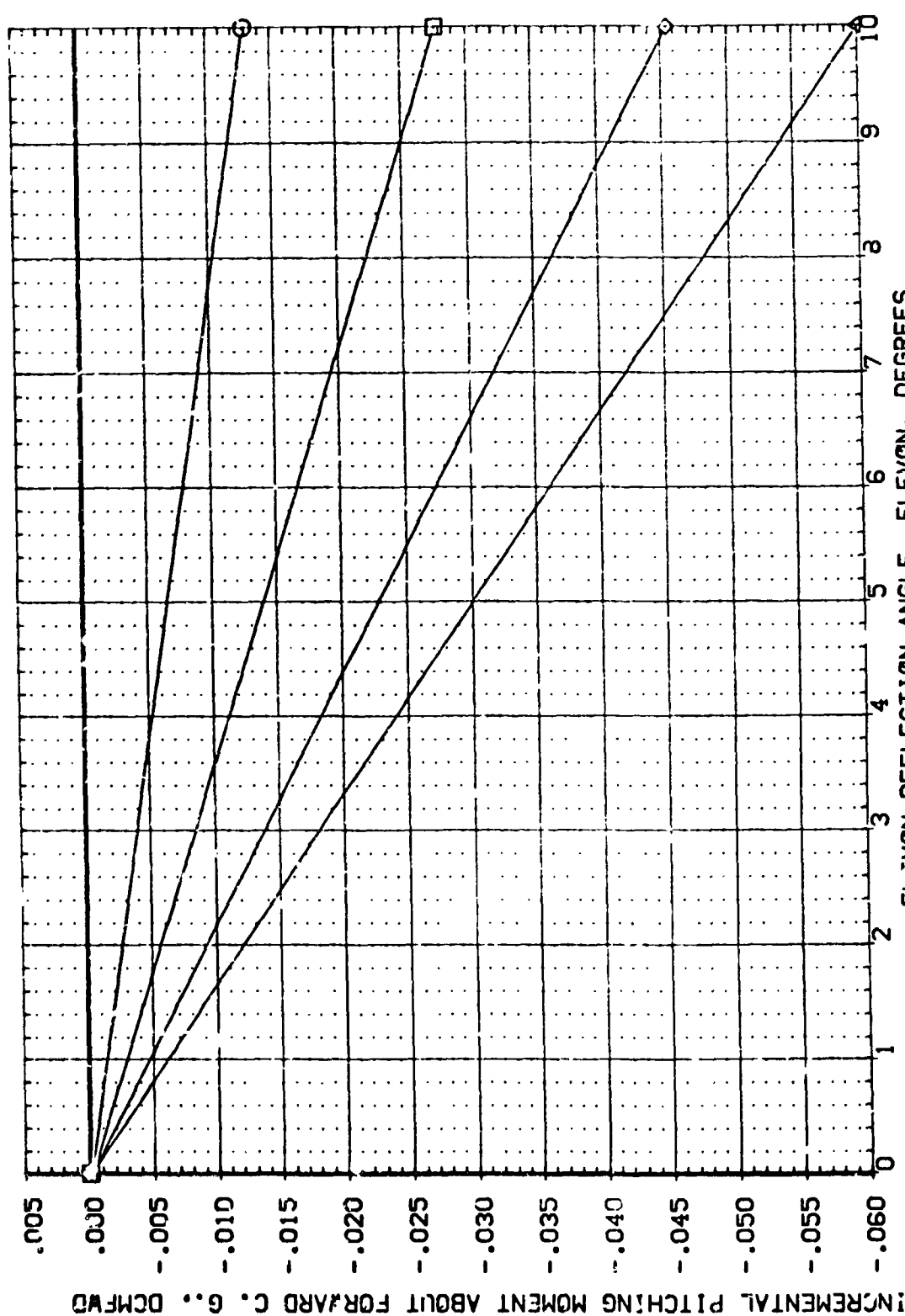
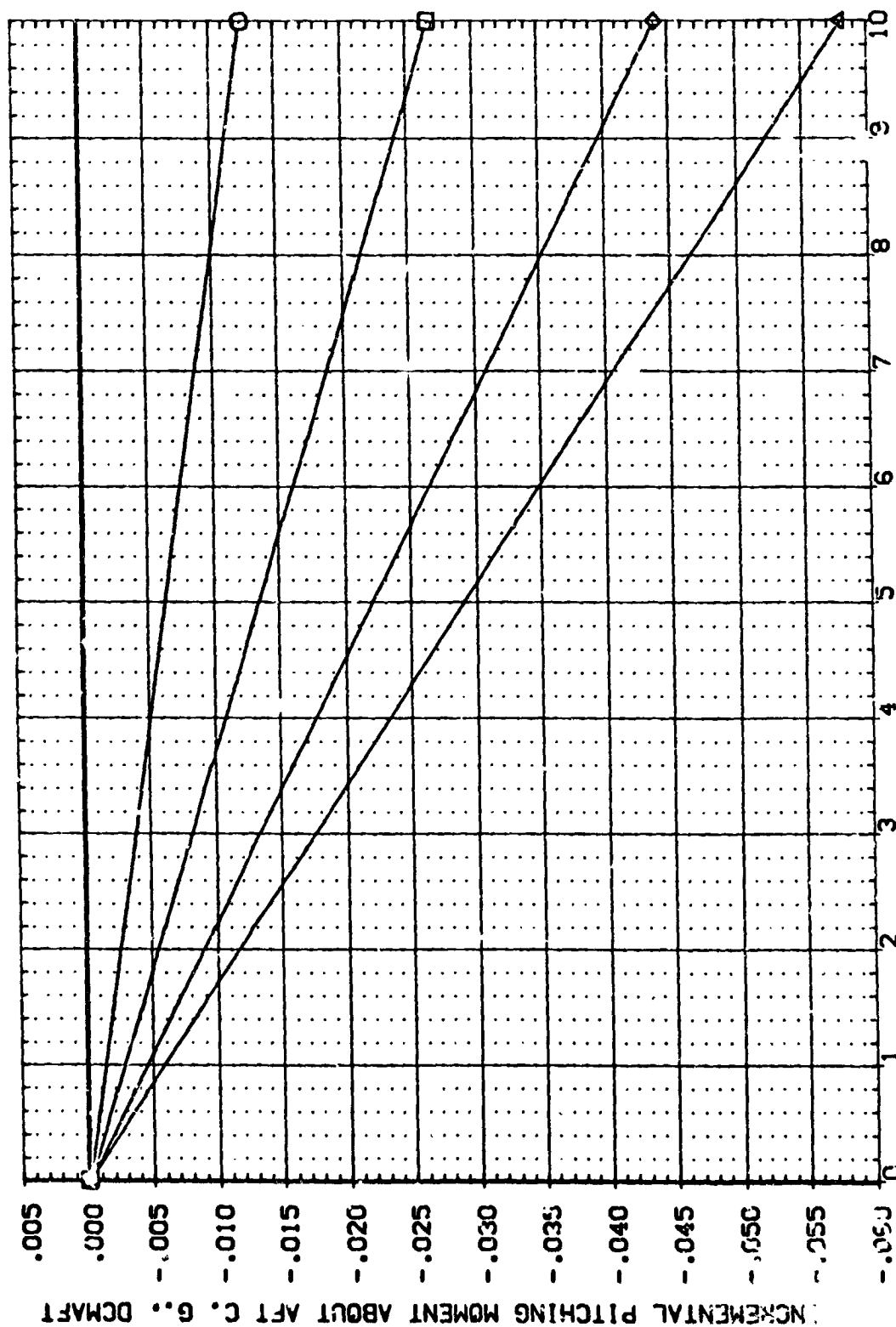


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(FZF010)

REFERENCE INFORMATION	
	SG.FT.
2690.0000	IN.
1290.3000	IN.
936.6800	IN.
1076.4800	IN.
.0000	IN.
375.0000	IN.
.0150	SCALE



ELEVON DEFLECTION ANGLE, DEGREES. DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF009)	AVES 3.5-176 QAB7 140 A/B DBR1TER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SO.FT.
(BEF008)	AVES 3.5-176 QAB7 140 A/B DBR1TER	.000	55.000	-11.700	3.000	LREF 1290.3000 IN.
						BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

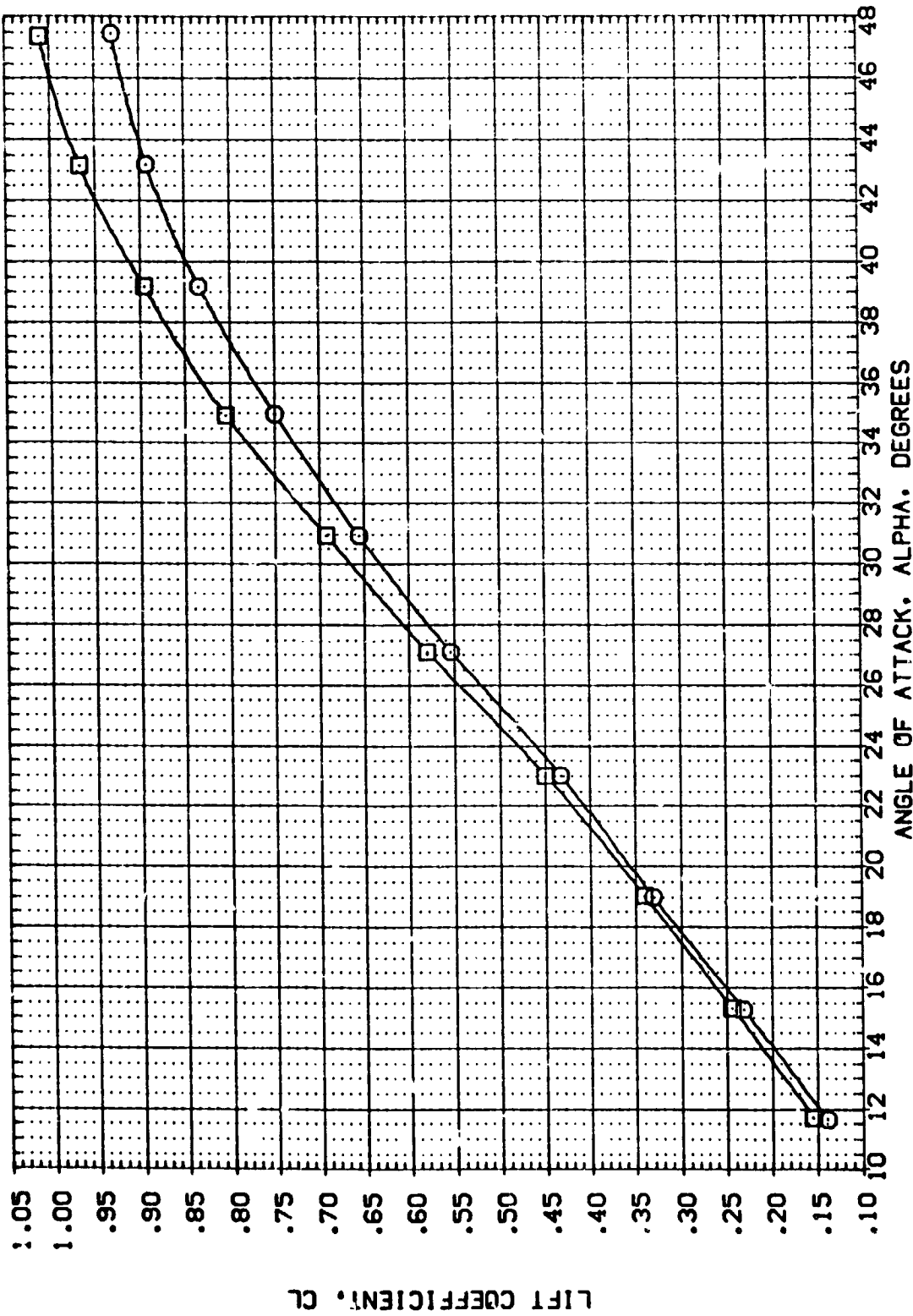


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		ELEVON		SPOBRK		BOFLAP		RN/L		REFERENCE INFORMATION	
(BEF009)	8	ANES 3.5-176	DAS7 140 A/B ORBITER	-40.000	.000	55.000	-11.700	3.000	SREF	2690.0000	50. FT.		
(BEF308)		ANES 3.5-176	DAS7 140 A/B ORBITER			55.000	-11.700	3.070	LREF	1290.3000	IN.		
									BREF	936.6800	IN.		
									XMRP	1076.4800	IN.		
									YMRP	.0000	IN.		
									ZMRP	375.0000	IN.		
									SCALE	.0150	SCALE		

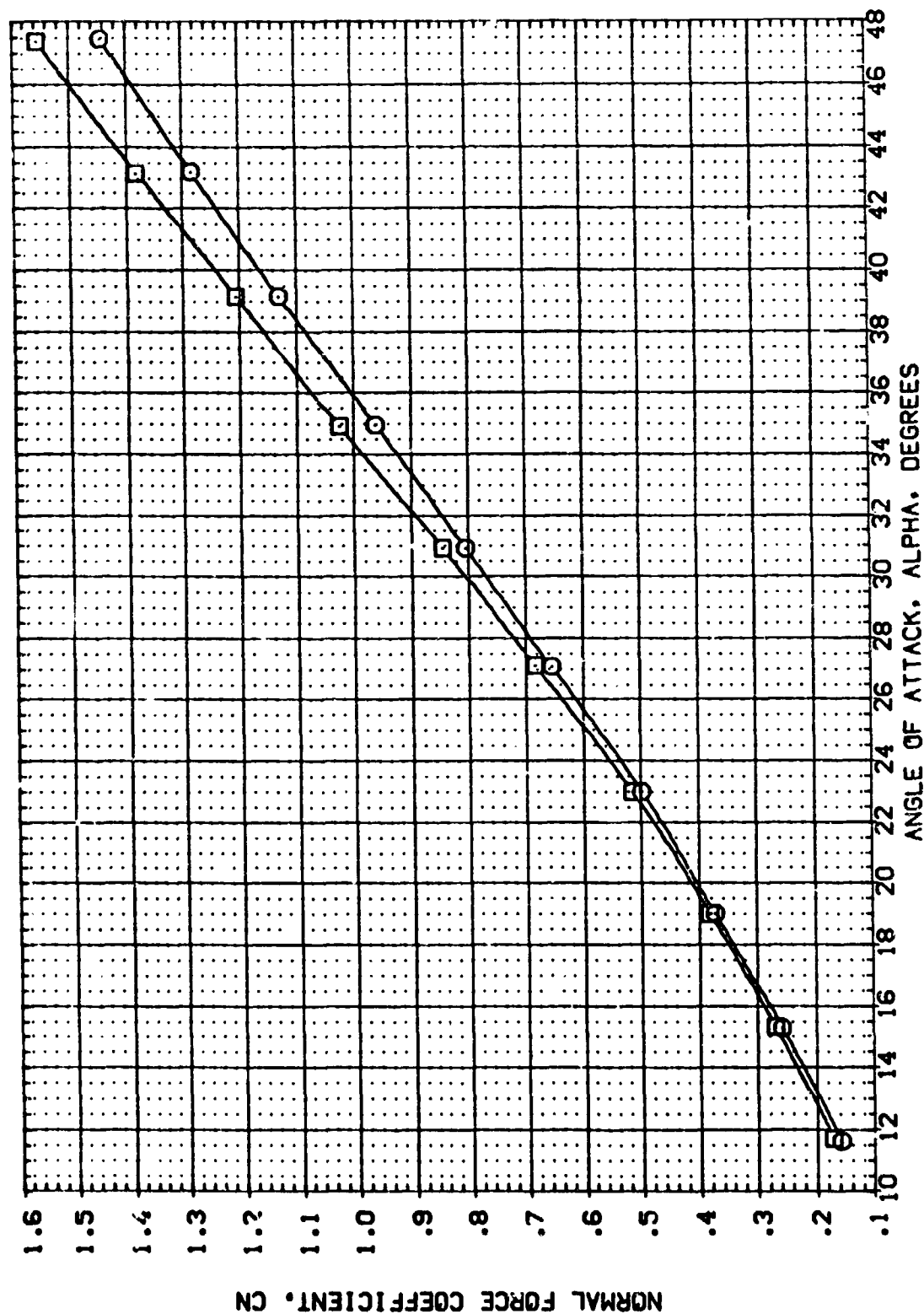


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFO09)	AMES 3.5-176 OAB7 140 A/B DRBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
(BEFO08)	AMES 3.5-176 OAB7 140 A/B DRBITER	.000	55.000	-11.00	3.000	LREF 1290.3000 IN.
						BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 373.0000 IN.
						SCALE .0150

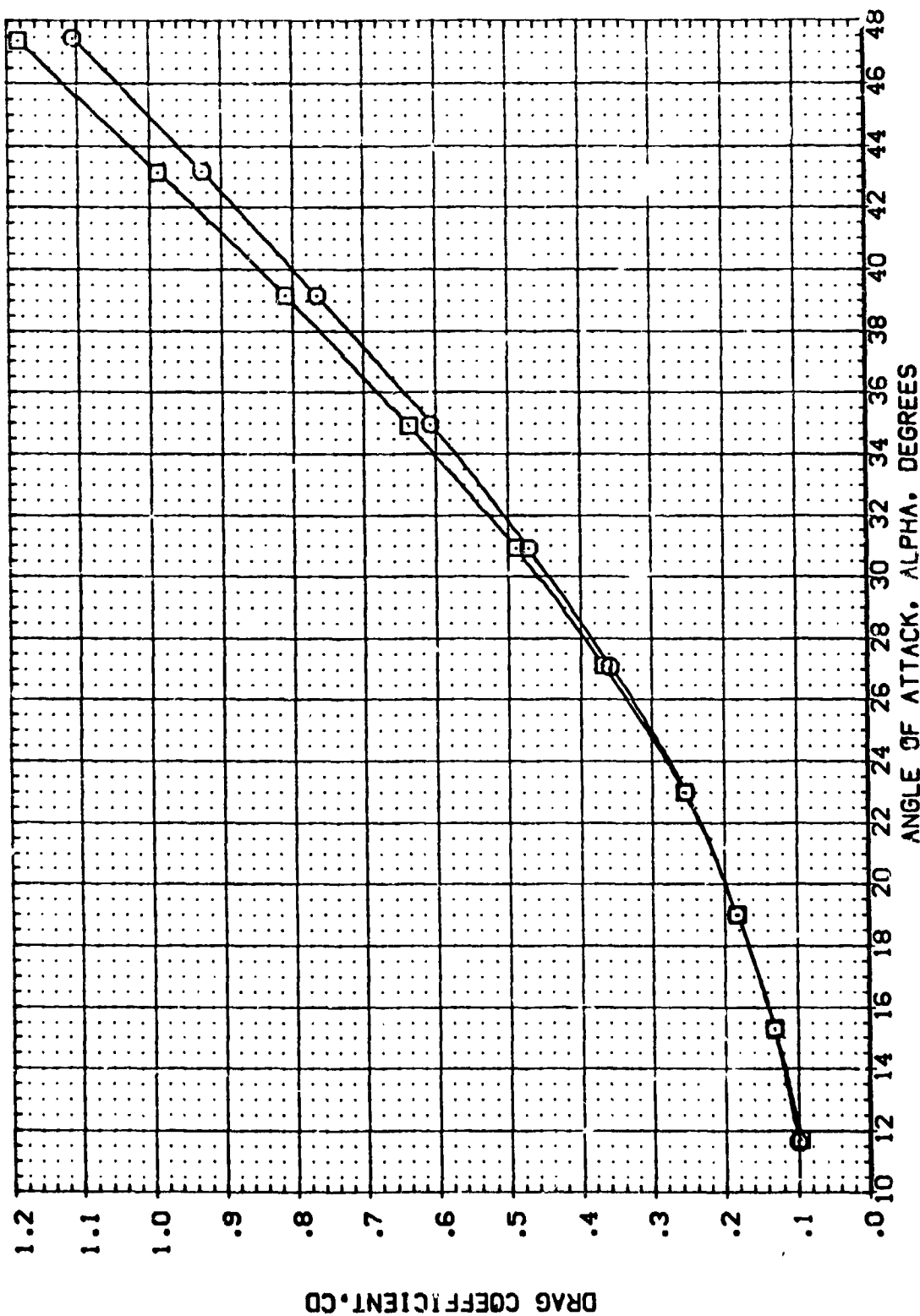


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7
CAJ MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFOOB)	YES 3.5-176 OAB7 140 A/B OAB7ER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SO.FT.
(BEFOOB)	YES 3.5-176 OAB7 140 A/B OAB7ER	.000	55.000	-11.700	3.000	LREF 1290.3000 IN.
						BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

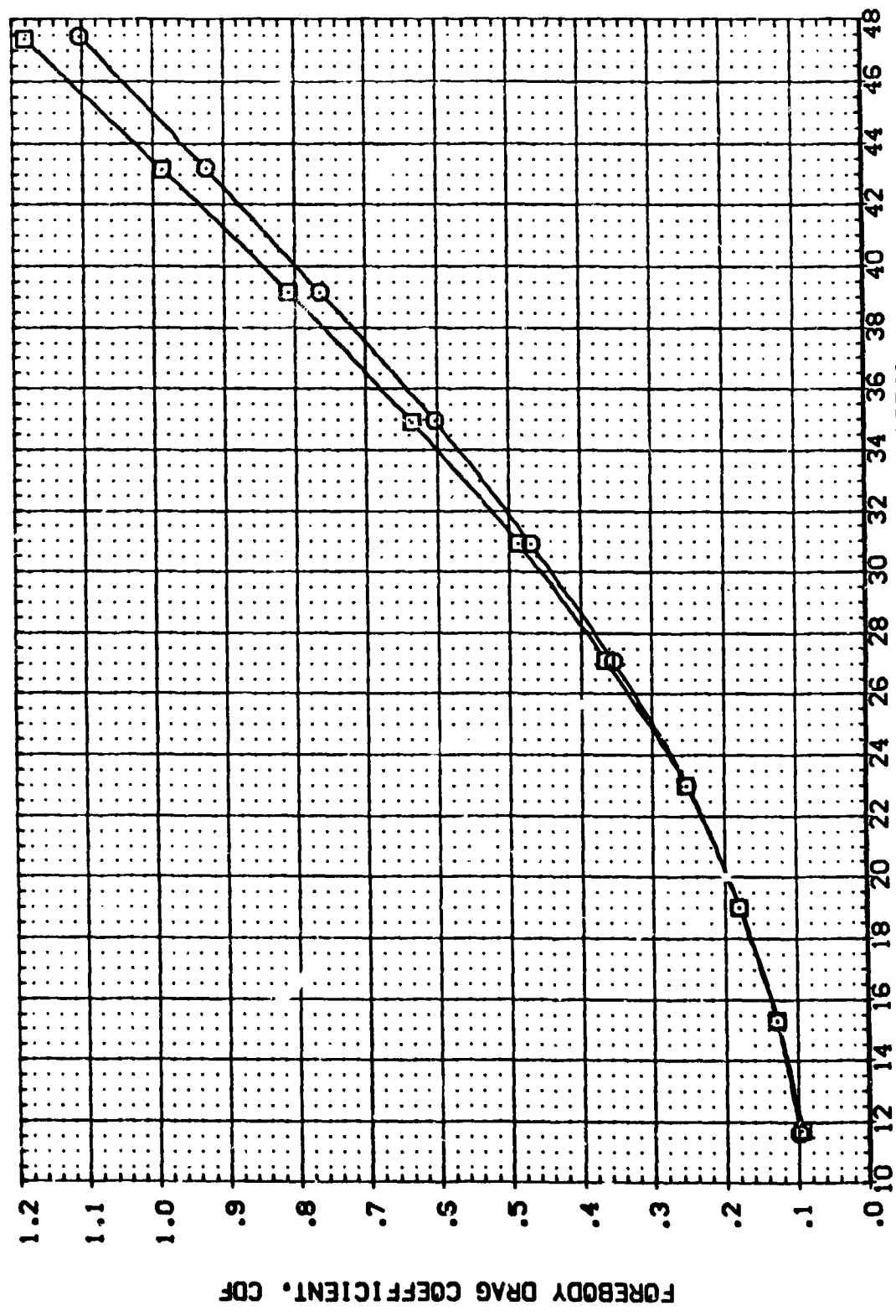
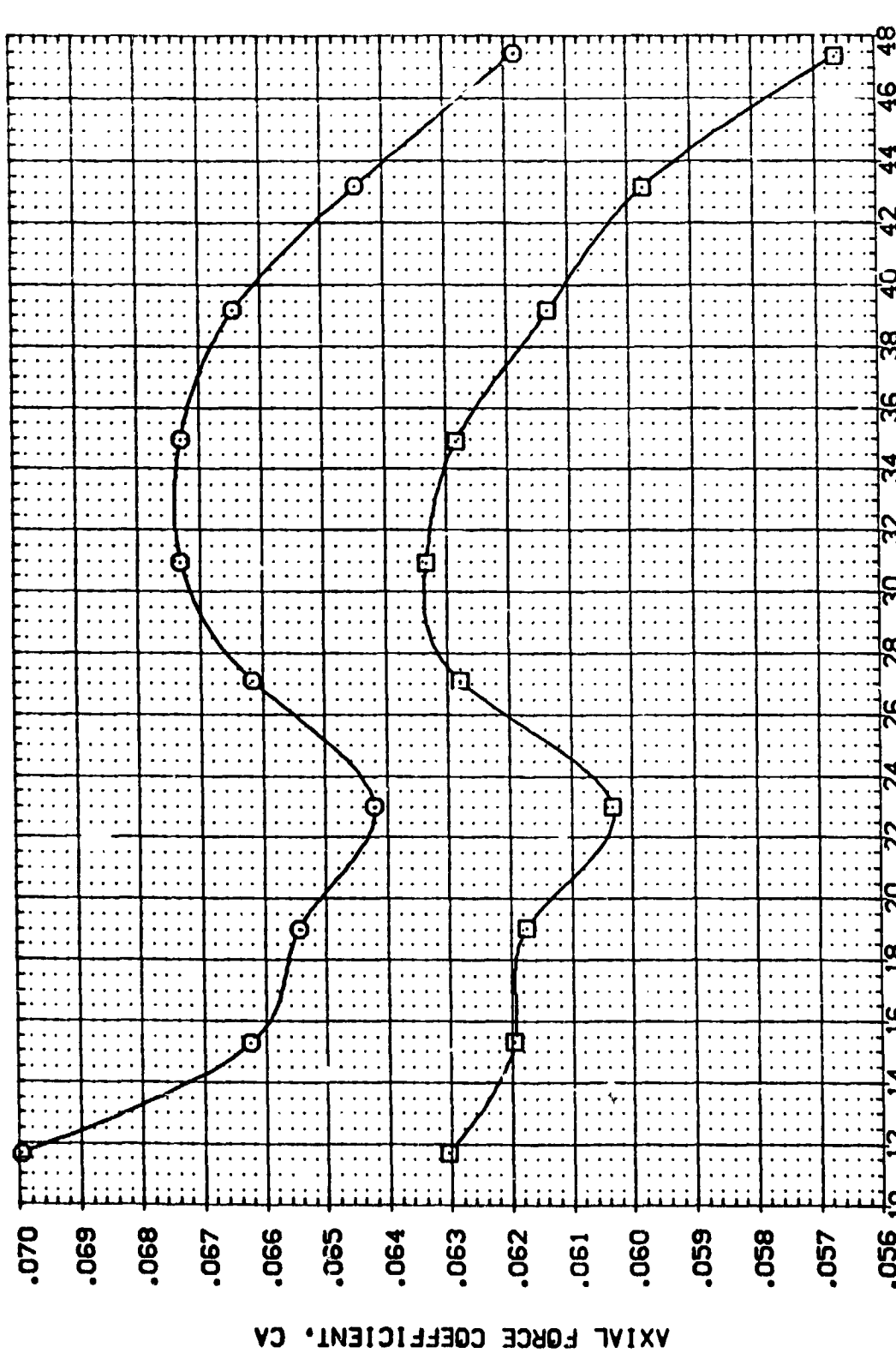


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		ELEVON		SPDRBK		BOFLAP		RN/L		REFERENCE INFORMATION	
(REF008)	1	AVES 3.5-176	QAB7 140 A/B	QAB7 140 A/B	QAB7 140 A/B	QAB7 140 A/B	QAB7 140 A/B	QAB7 140 A/B	QAB7 140 A/B	QAB7 140 A/B	QAB7 140 A/B	QAB7 140 A/B	QAB7 140 A/B
(REF008)	1	AVES 3.5-176	QAB7 140 A/B	QAB7 140 A/B	QAB7 140 A/B	QAB7 140 A/B	QAB7 140 A/B	QAB7 140 A/B	QAB7 140 A/B	QAB7 140 A/B	QAB7 140 A/B	QAB7 140 A/B	QAB7 140 A/B



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF009)	AVES 3.5-176 QAB7 140 A/B QRB TER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
(BEF008)	AVES 3.5-176 QAB7 140 A/B QRB TER	.000	55.000	-11.700	3.000	LREF 1290.3000 IN.
						BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

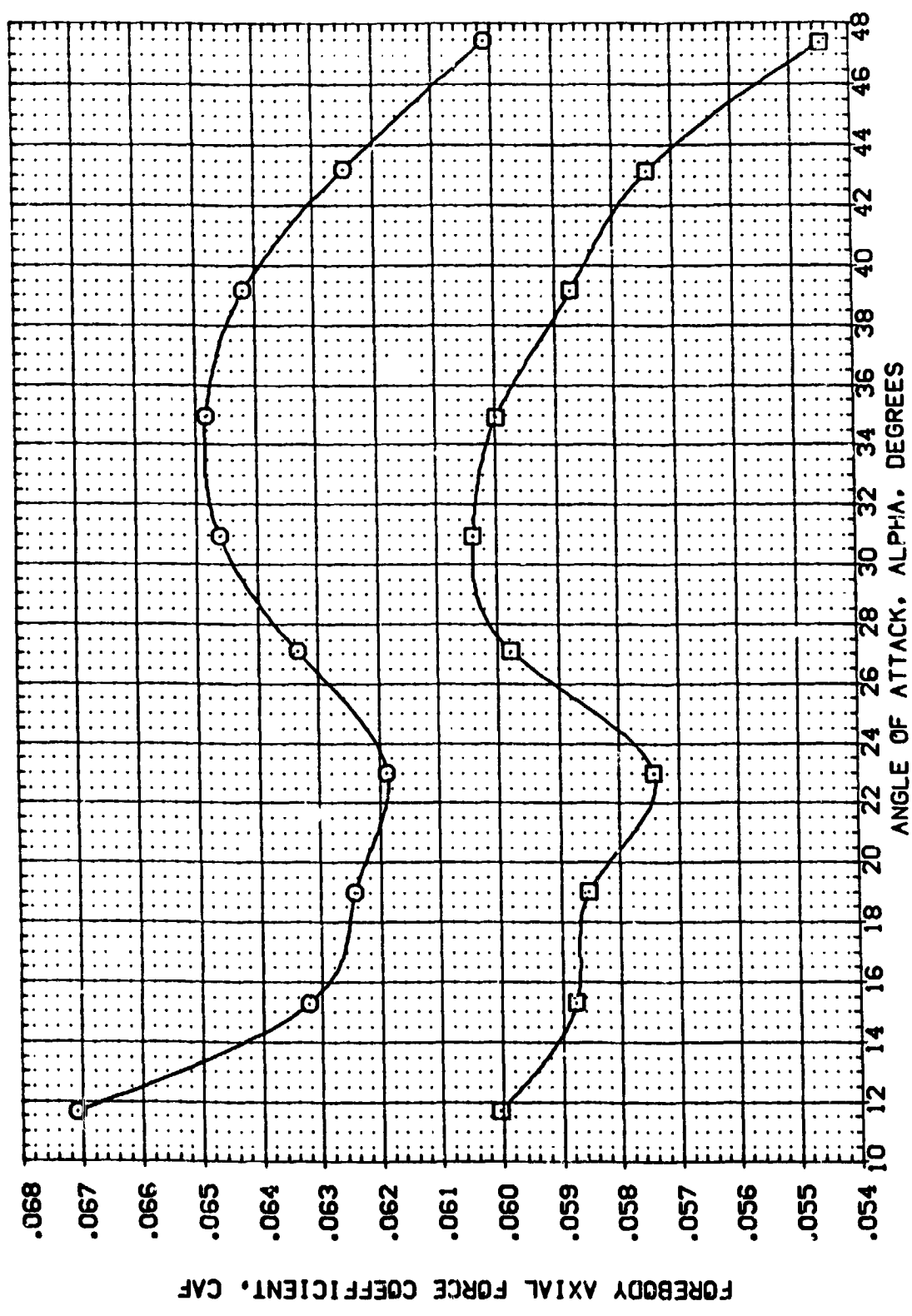


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		ELEVON		SPOBRK		BDFLAP		RN/L		REFERENCE INFORMATION	
(BEF009)	□	AVES 3.5-176	QAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF	2690.0000	50. FT.			
(BEF008)	□	AVES 3.5-176	QAB7 140 A/B ORBITER	.000	55.000	-11.700	3.000	LREF	1290.3000	IN.			
								BREF	936.6800	IN.			
								YREF	1076.4800	IN.			
								ZREF	.0000	IN.			
								SCALE	375.0000	IN.			
								SCALE	.0150	SCALE			

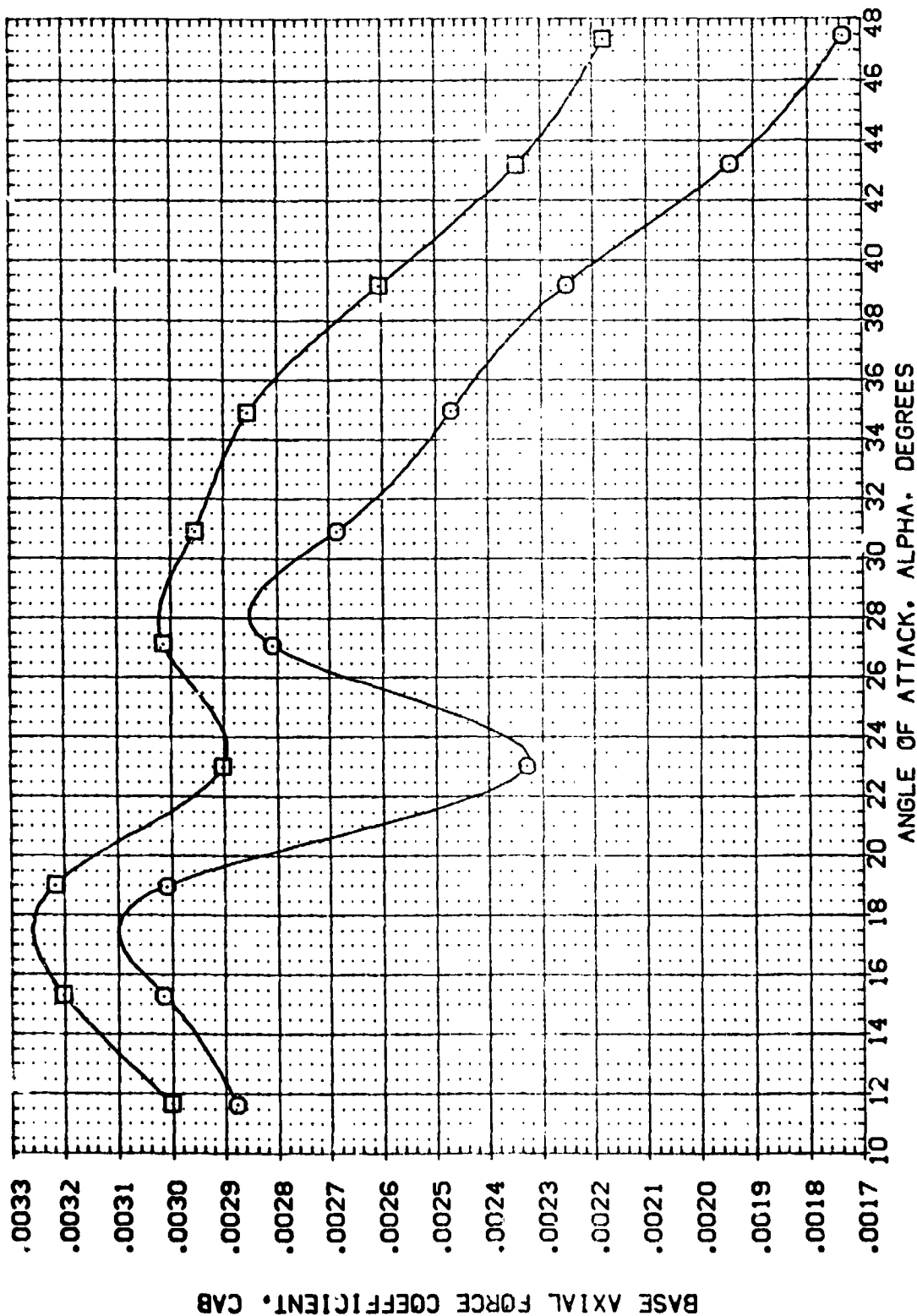


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFOOB)	AVES 3.5-176 OAB7 140 A/B OAB7ITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SO.FT.
(BEFOOB)	AVES 3.5-176 OAB7 140 A/B OAB7ITER	.000	55.000	-11.700	3.000	LREF 1290.3070 IN.
						BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 373.0000 IN.
						SCALE .0150

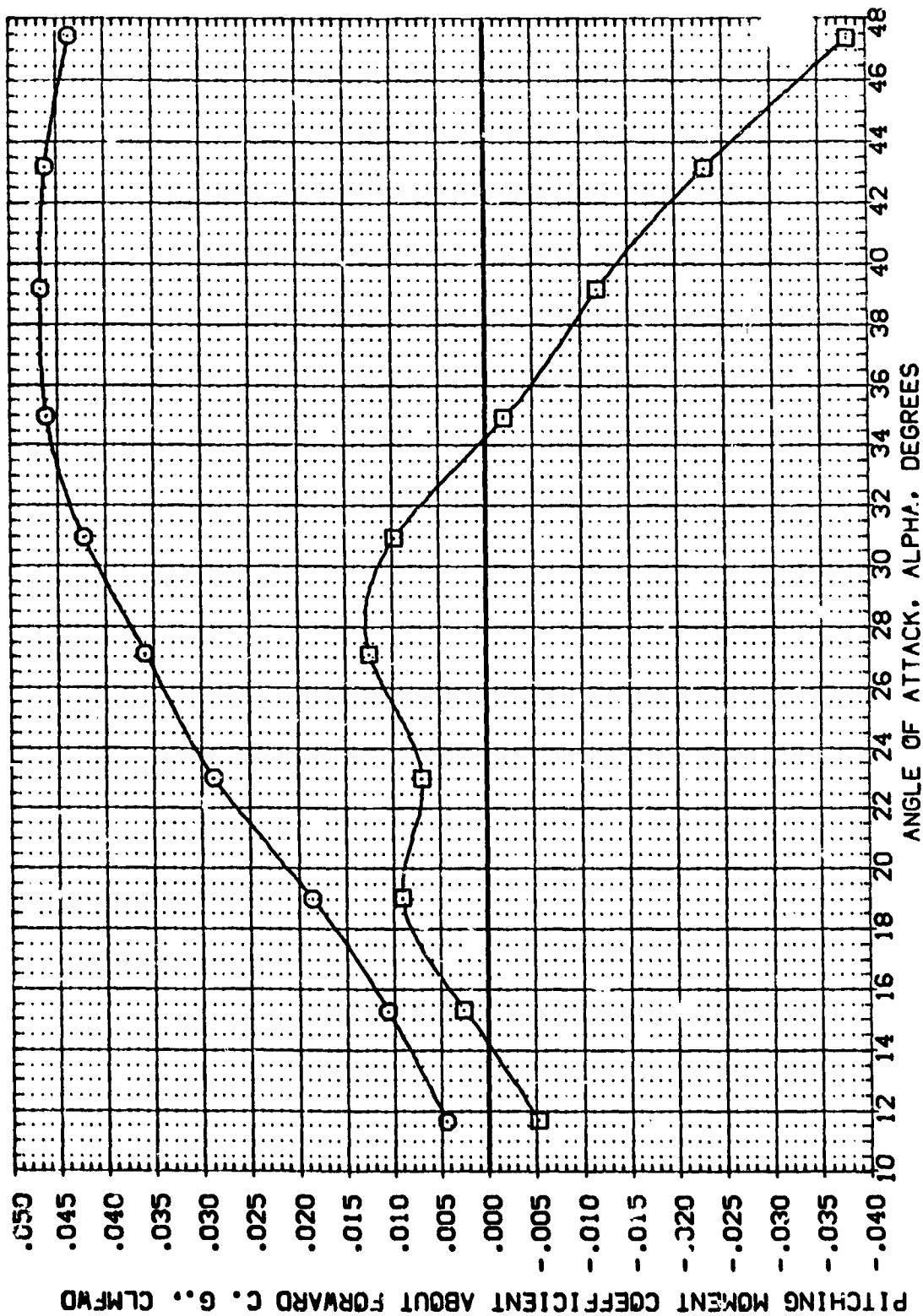


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORCK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF009)	AVES 3.5-176 OAB7 140 A/B ORBITER	-10.000	55.000	-11.700	3.000	SREF 2690.0000 50.000
(BEF008)	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	-11.700	3.000	LREF 1290.3000 IN.
						BREF 936.6000 IN.
						XTRP 1076.4000 IN.
						YTRP 375.0000 IN.
						ZTRP .0150 SCALE

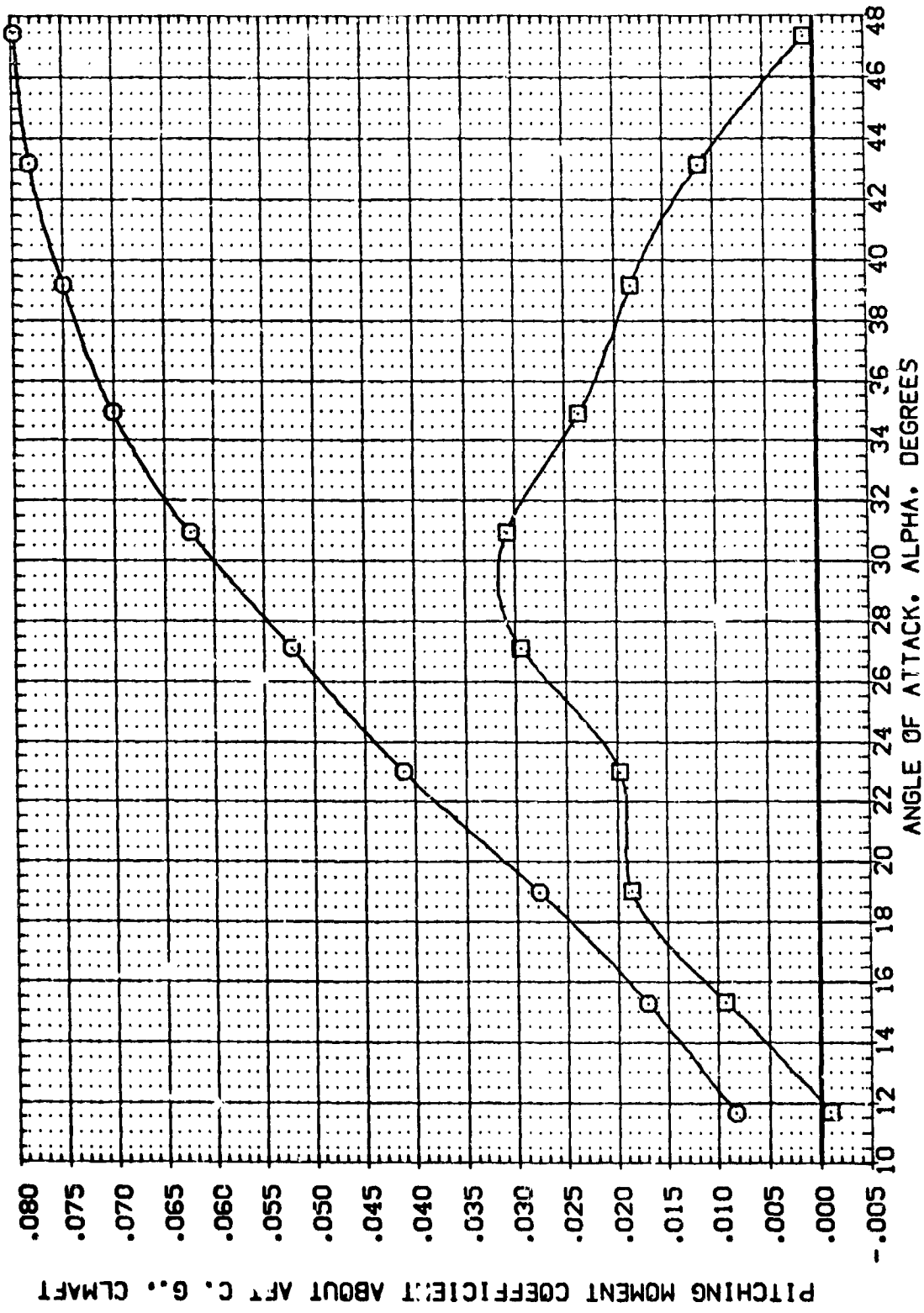
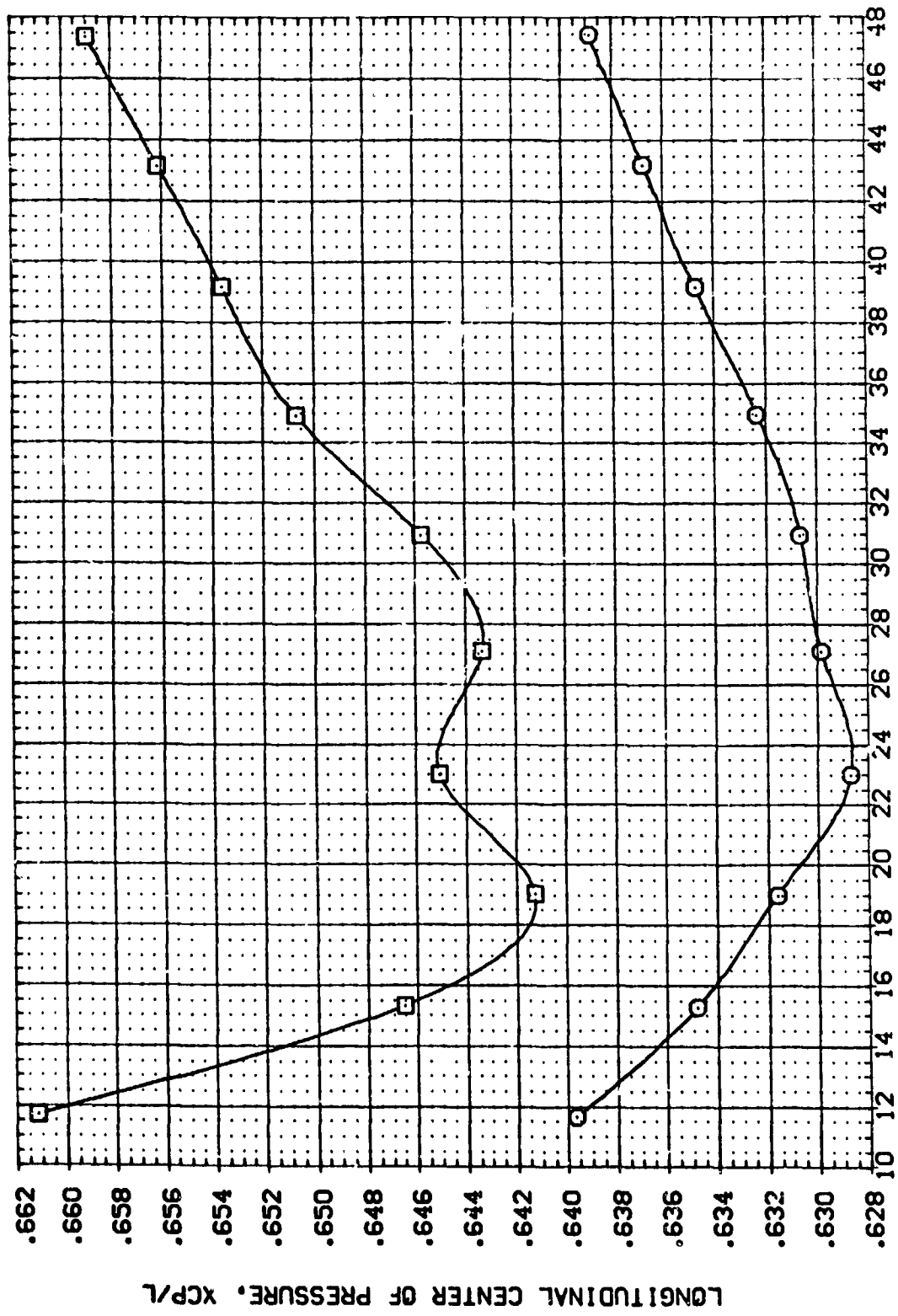


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO09)	AVES 3.5-176 0A87 140 A/B 088/ITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SO.FT.
(BEFO08)	AVES 3.5-176 0A87 140 A/B 088/ITER	.000	55.000	-11.700	3.000	LREF 1290.3000 IN.
						BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL: Q
 (BEFORE) AYES 3.5-176 CAB7 140 A/B ORBITER
 (BEFORE) AYES 3.5-176 CAB7 140 A/B ORBITER

ELEVON SPOBRK BOFLAP RN/L
 -40.000 55.000 -11.700 3.000
 .000 55.000 -11.700 3.000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 1290.3000 IN.
 BREF 936.6800 IN.
 XMRP 1076.4800 IN.
 YMRP 0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150

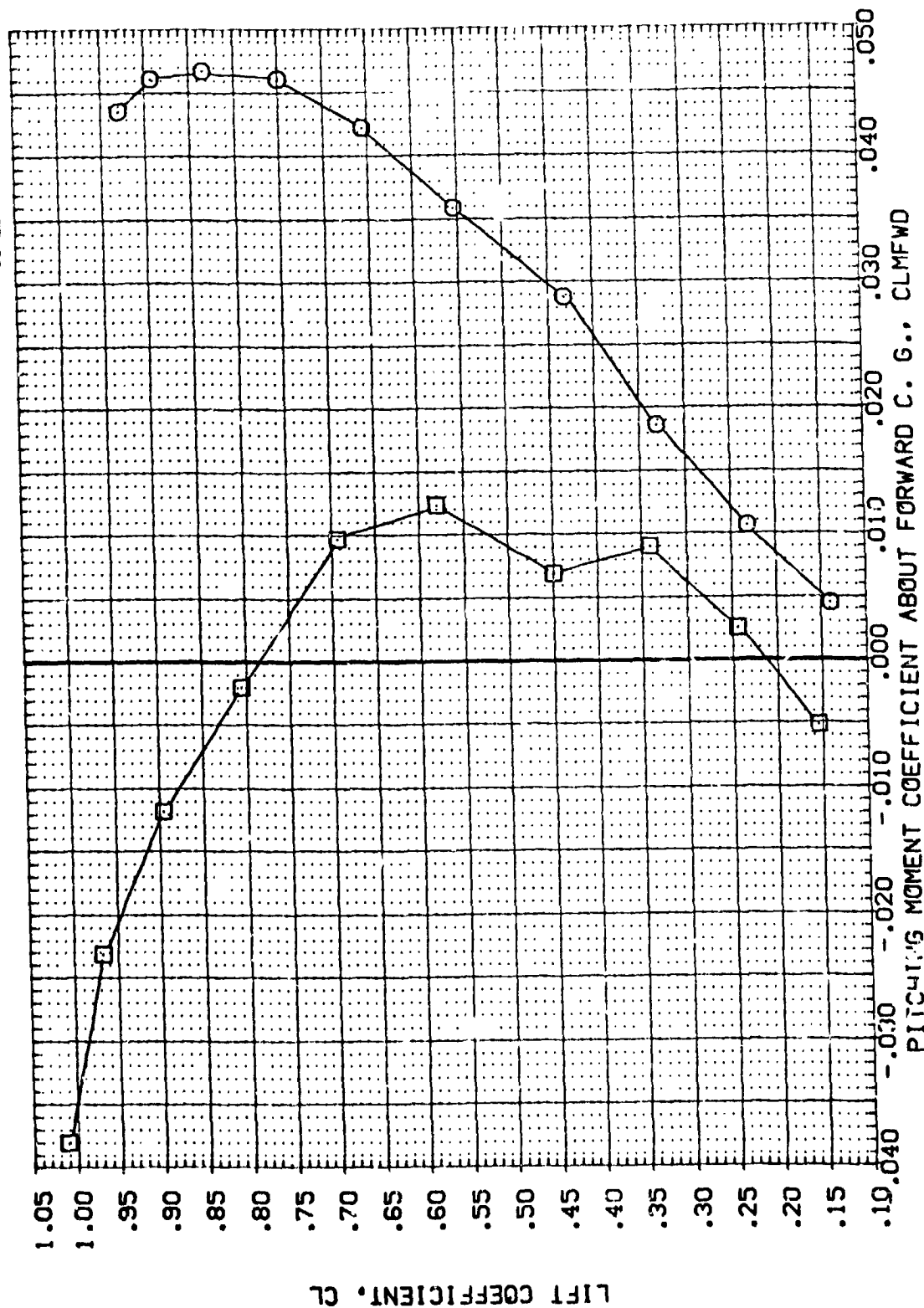


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		REFERENCE INFORMATION	
(BEF009)	□	AVES 3.5-176	QAB7 140 A/B ORBITER	SREF	2690.0000 SQ. FT.
(BEF008)	□	AVES 3.5-176	QAB7 140 A/B ORBITER	LREF	1290.3000 IN.
				BREF	936.6800 IN.
				XMRP	1076.4300 IN.
				YMRP	.0000 IN.
				ZMRP	375.0000 IN.
				SCALE	.0150 SCALE

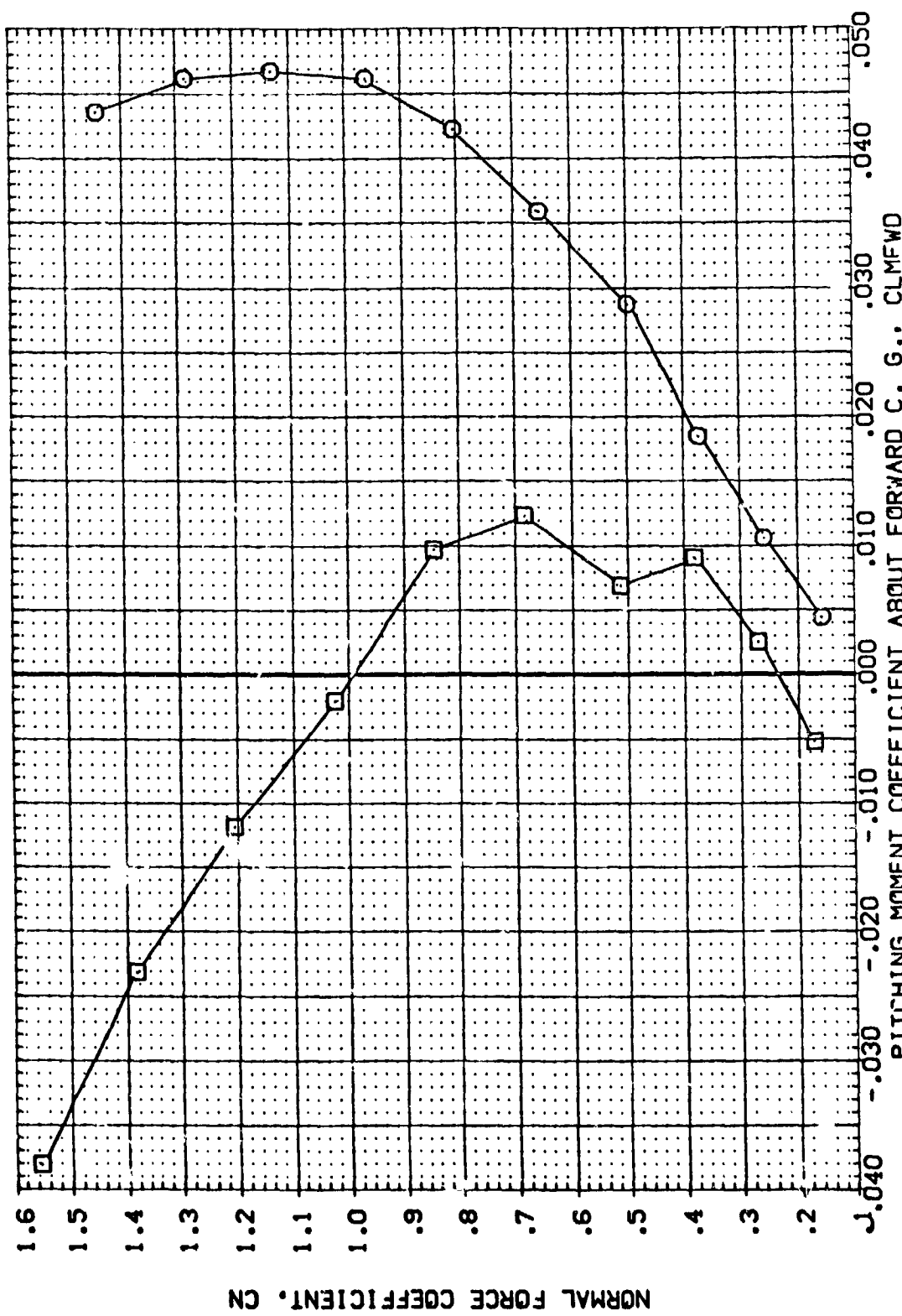


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

(A) MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORWK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFOOS)	AVES 3.5-176 0A87 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2650.0000 SQ.FT.
(BEFOOB)	AVES 3.5-176 0A87 140 A/B ORBITER	.000	55.000	-11.700	3.000	LREF 1250.3000 IN.
						SREF 936.6800 IN.
						YREF 1076.4800 IN.
						ZREF .0000 IN.
						ZWRP 375.0000 IN.
						SCALE .0150

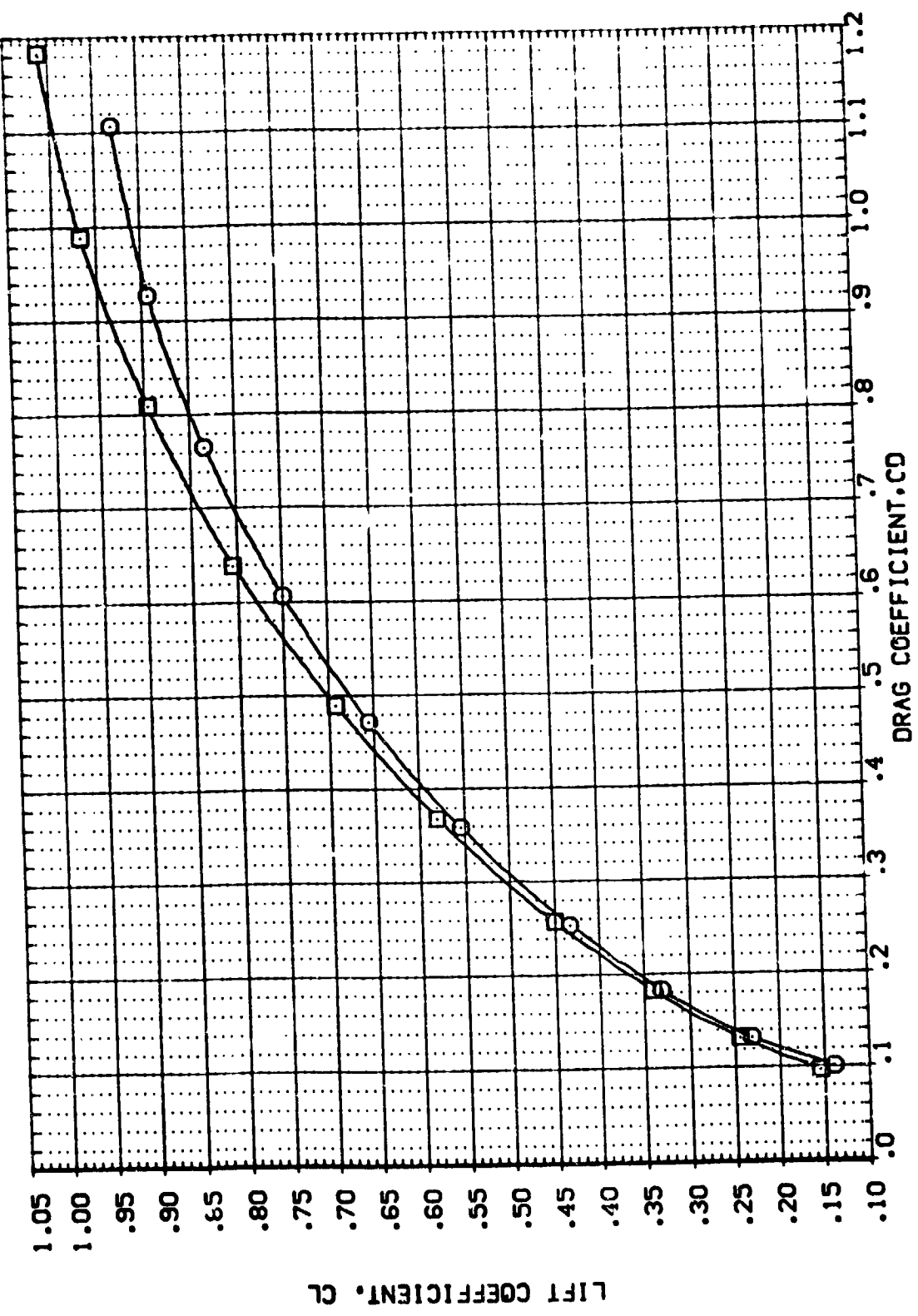


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		ELEVON		SPDRK		BOFLAP		RN/L		REFERENCE INFORMATION	
(AEFO08)	□	AMES 3.5-176	QAS7 140 A/B	-40.000	55.000	-11.700	3.000	2690.0000	50.17.				
(AEFO08)	□	AMES 3.5-176	QAS7 140 A/B	.000	55.000	-11.700	3.000	1290.3000	IN.				
								936.6800	IN.				
								1076.4800	IN.				
								375.0000	IN.				
								SCALE	.0150				

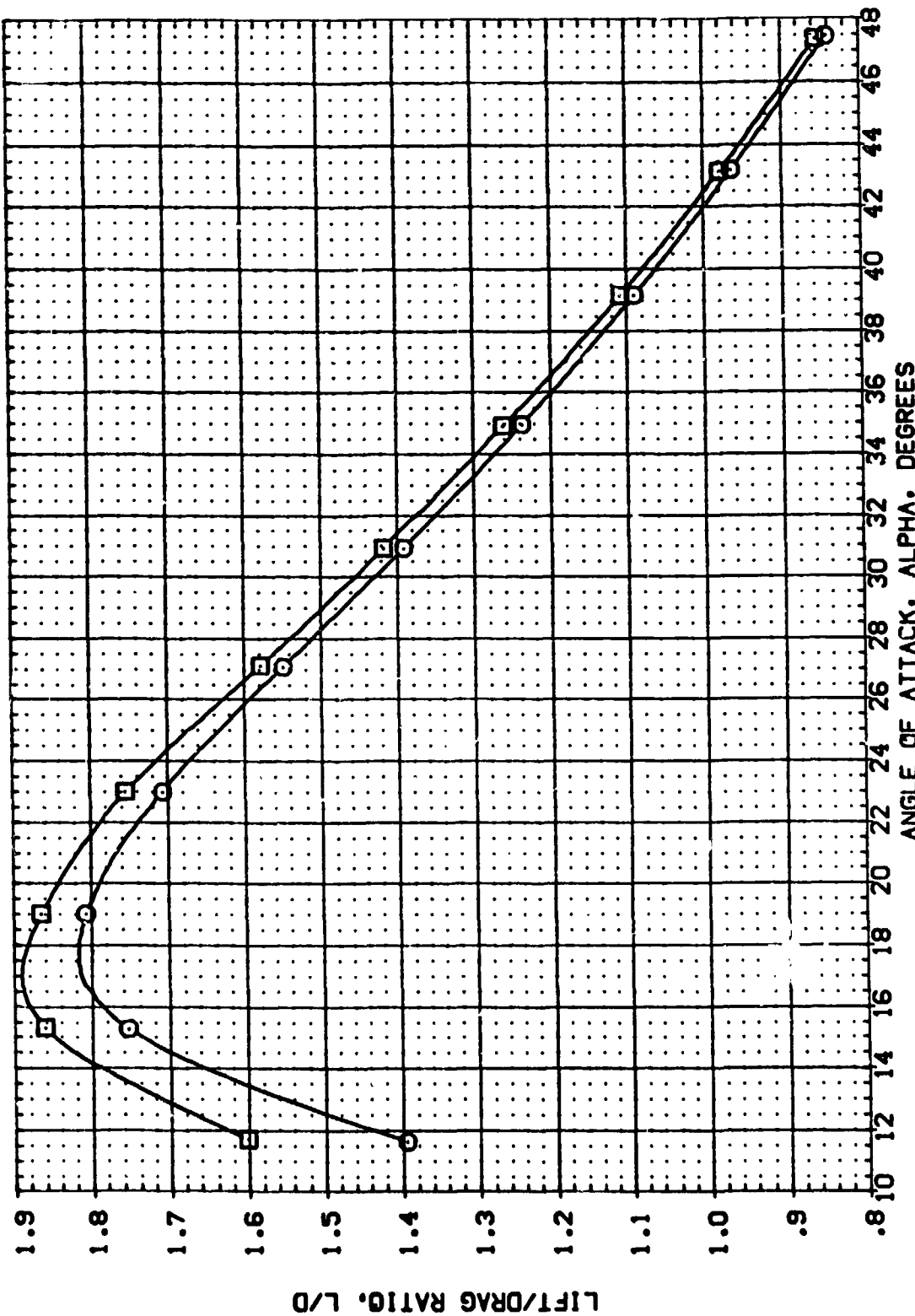


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EFO08) ○	AVES 3.5-176 0487 140 A/B ORBITER	-40.000	59.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
						LREF 1290.3000 IN.
						BREF 936.6800 IN.
						XREF 1076.4800 IN.
						YREF 0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

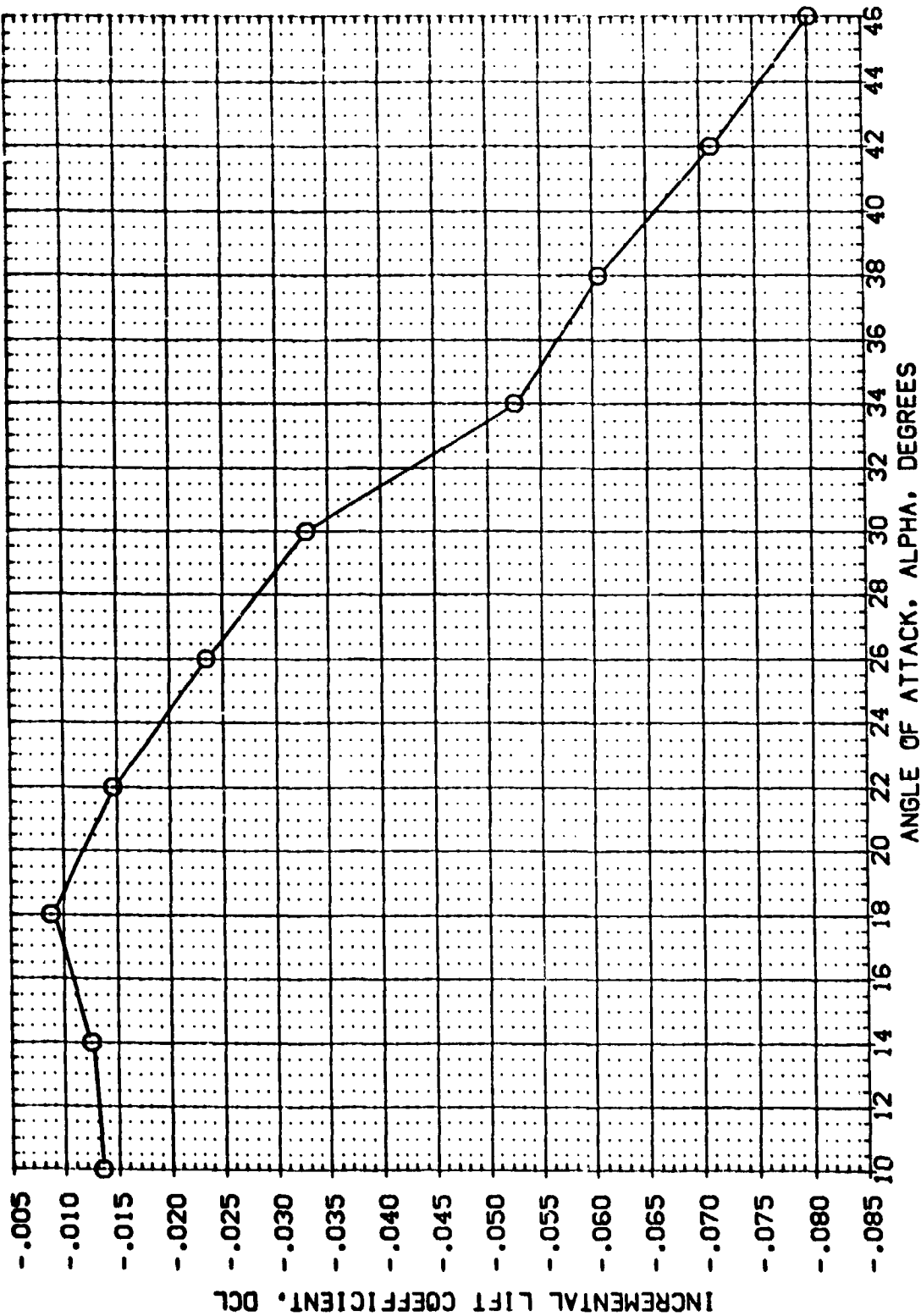


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(EEF009) ○	WES 3.5-176 0.87 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
						LREF 1290.3000 IN.
						BREF 936.6800 IN.
						WREF 1076.4800 IN.
						WREF 375.0000 IN.
						SCALE .0150

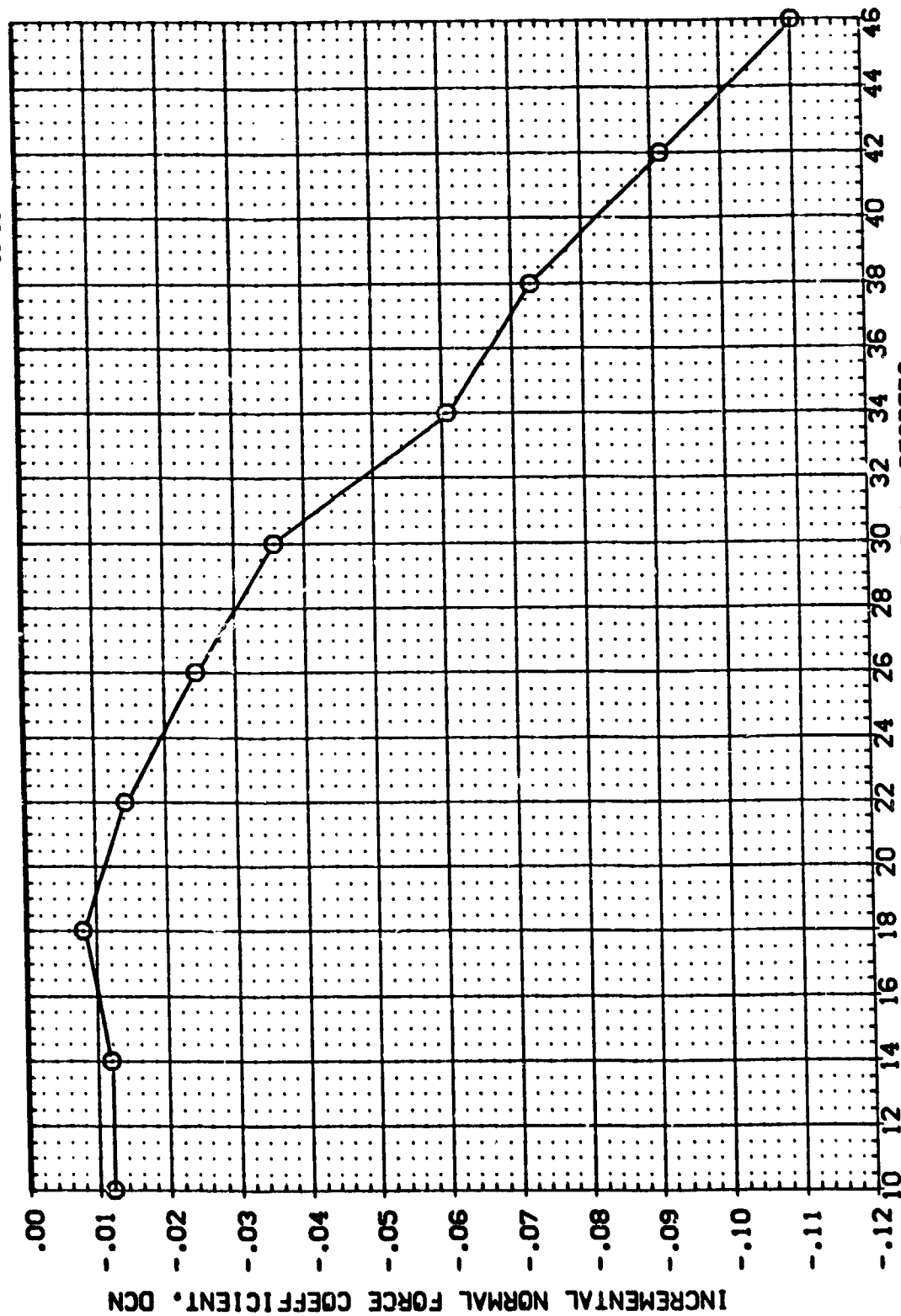


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL: \bigcirc CONFIGURATION DESCRIPTION: ARES 3.5-176 0467 140 A/B ORBITER

DE: -40.000 SPARK: 55.000 BOFLAP: -11.700 RN/L: 3.000

REFERENCE INFORMATION:

	SPREF	LRREF	BRREF	XRREF	YRREF	ZRREF	SCALE	50.FT.
	2690.0000	1290.3000	536.6800	1076.4800	.0000	375.0000	.0150	IN.

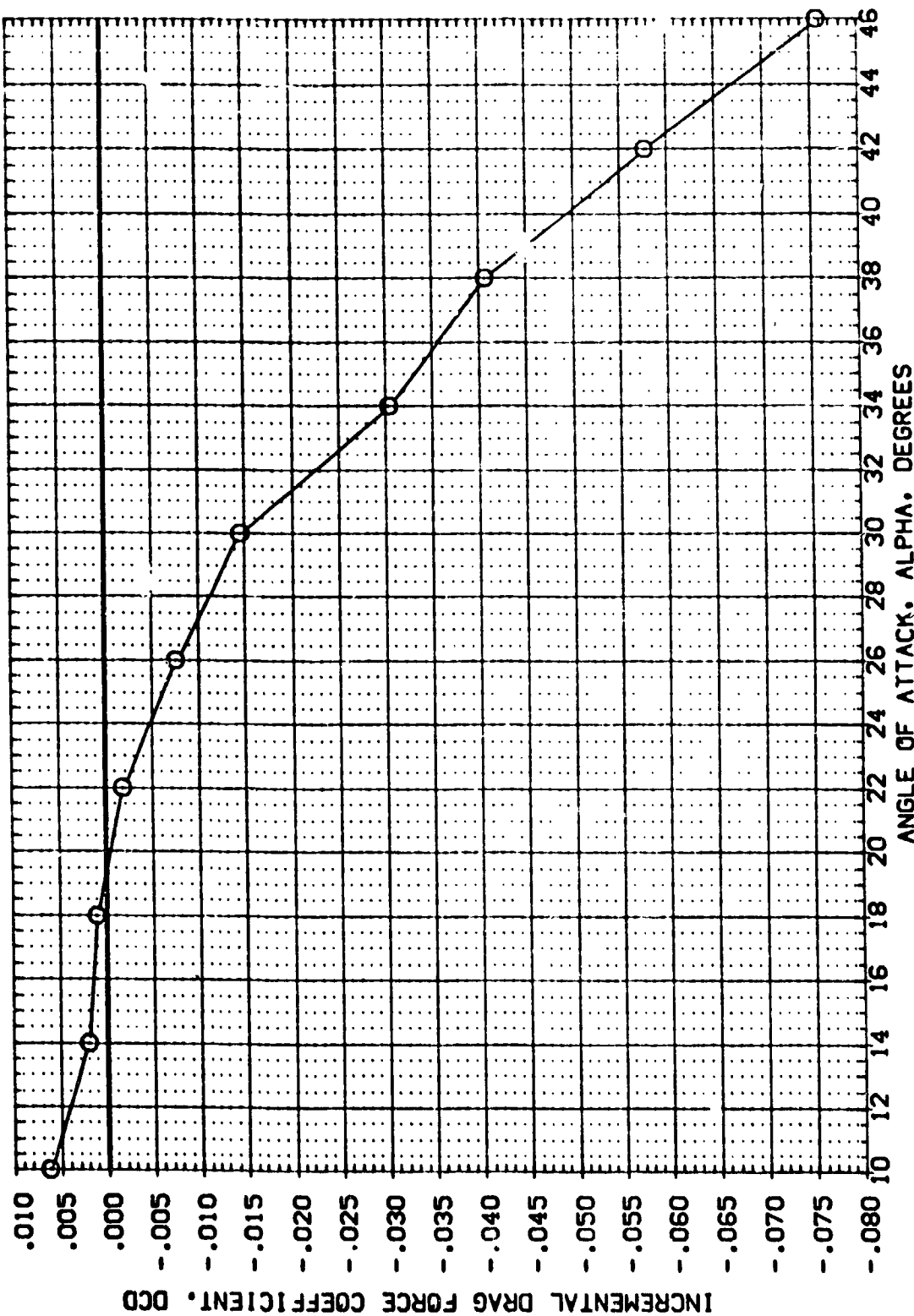
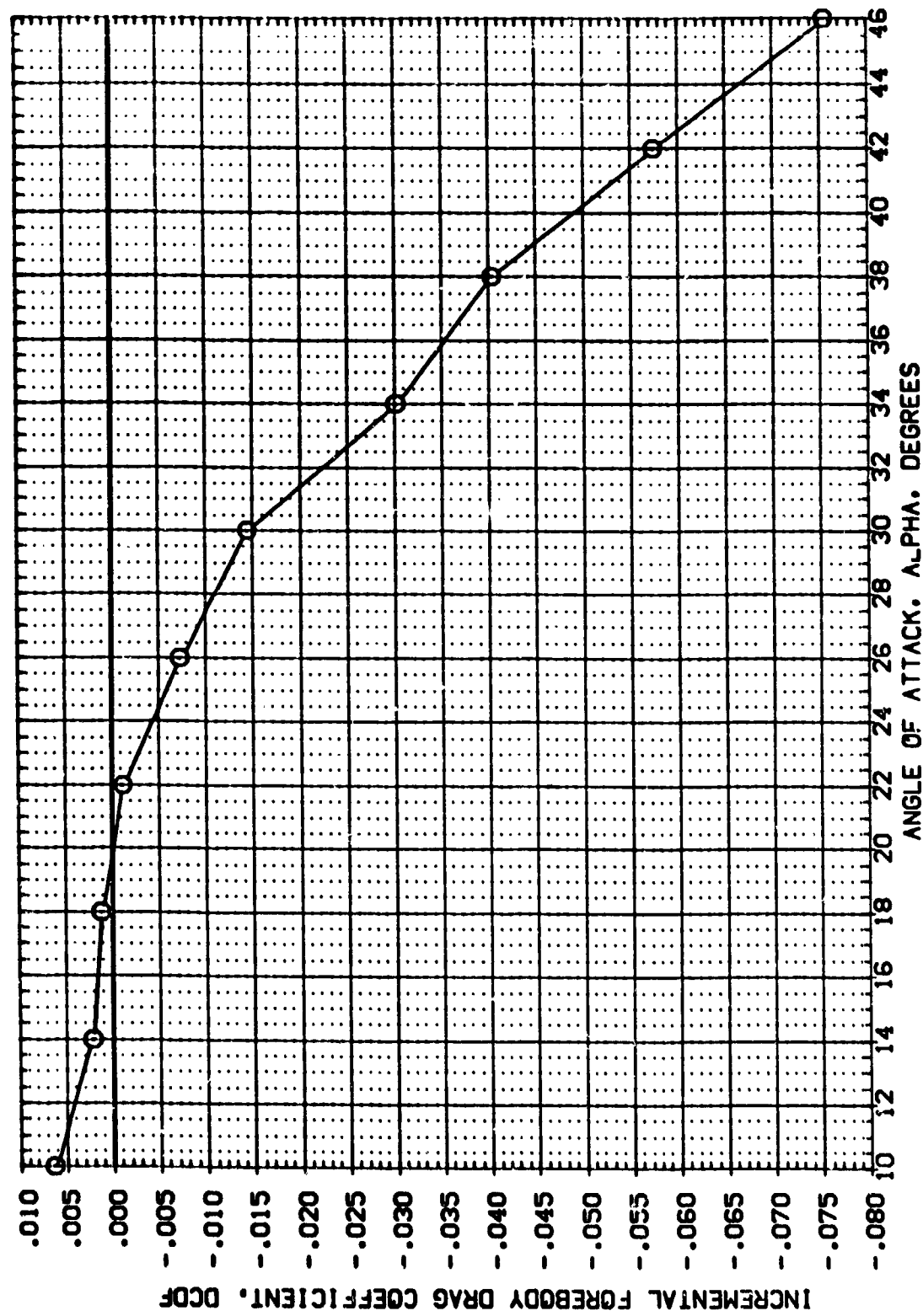


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

(A)MACH = 7.32

REFERENCE INFORMATION	
SHEET	2880.0000 90. FT.
LIST	1750.5036 IN.
SHEET	936.8000 IN.
X-700	1076.4800 IN.
Y-700	0.0000 IN.
Z-700	375.0000 IN.
SCALE	.0150 SCALE

FIG. 9 ELEVON EFFECTIVENESS, $RN/L=3.0$, $BDFLAP=-11.7$

(A)MACH = 7.32

NOTES AND INFORMATION		
SPR	2630.0000	50. FT.
REF	1290.3000	IN.
SPR	936.5800	IN.
REF	1076.4800	IN.
SPR	375.0000	IN.
REF	0.0150	SCALE

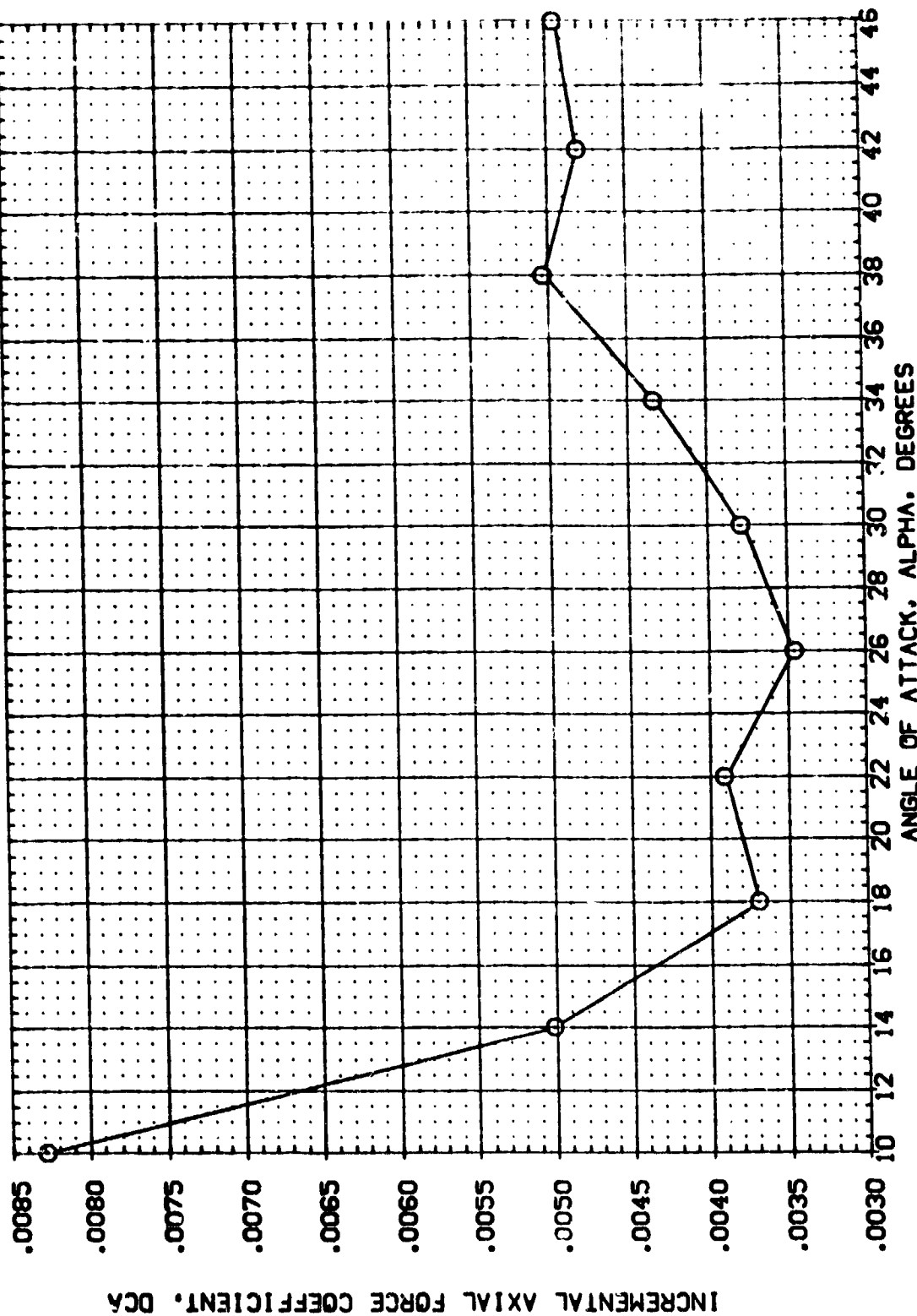


FIG. 9 FLEVON EFFECTIVENESS; RN/L=3.0; BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL: (EEF009) \bigcirc ARES 3.5-176 0467 140 A/B 008107

DE: -40.000 SP000K: 55.000 BDFLAP: -11.700 RN/L: 3.000

REFERENCE INFORMATION:

SREF	2630.0000	50. FT.
UNEF	1230.3000	IN.
BREF	535.6800	IN.
YREF	1076.4800	IN.
ZREF	375.0000	IN.
SCALE	.0150	SCALE

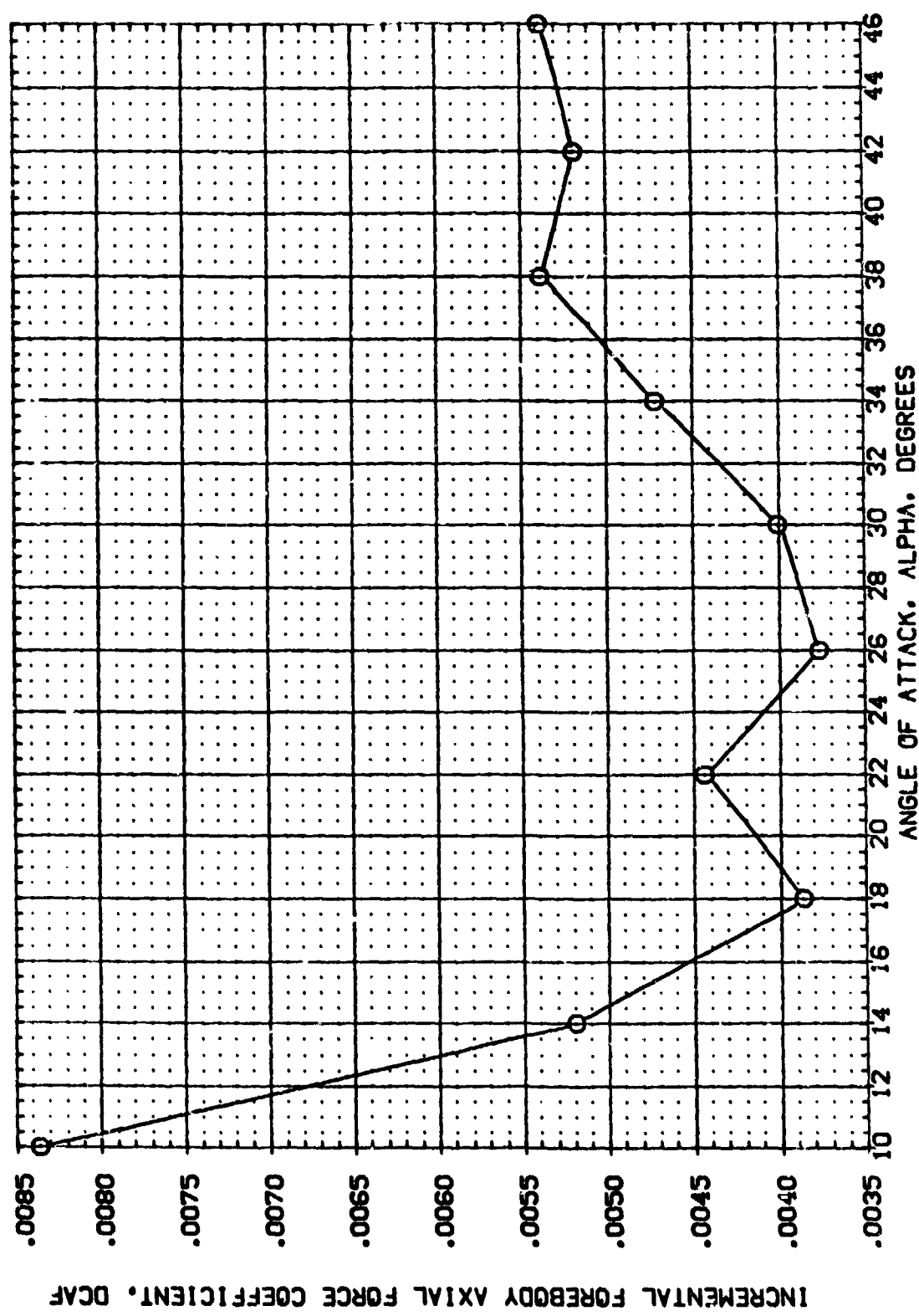


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

CA/MACH = 7.32

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (EED005) O ANES 3.5-176 0467 140 A/B 046178

DE SPDRK BDFLAP RN/L
 -40.000 55.000 -11.700 3.000

REFERENCE INFORMATION
 SREF: 2650.0000 50.0000 IN.
 LREF: 1250.3000 10.0000 IN.
 BREF: 936.6800 10.0000 IN.
 YREF: 1076.4800 10.0000 IN.
 ZREF: 375.0000 10.0000 IN.
 SCALE: .0150

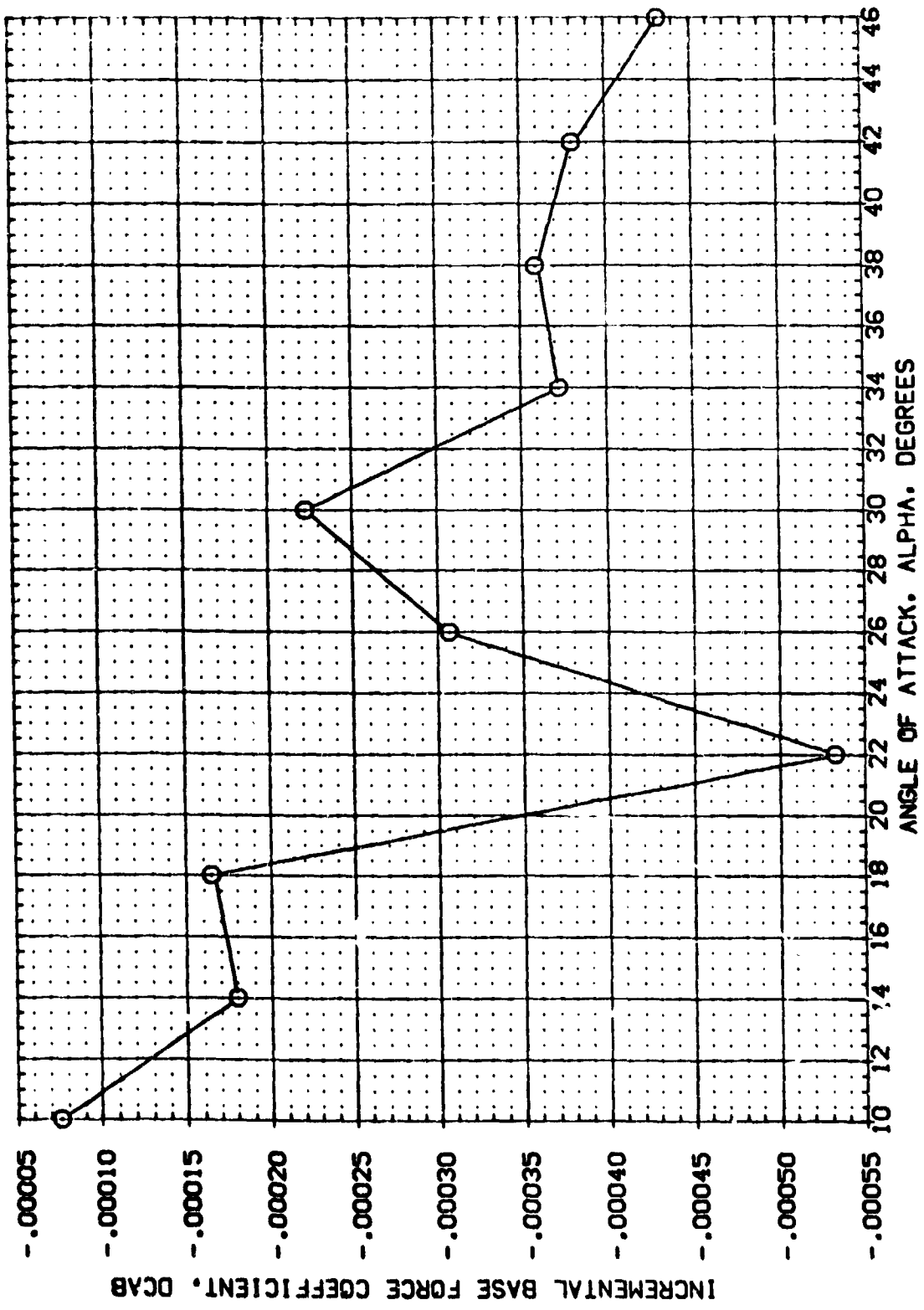
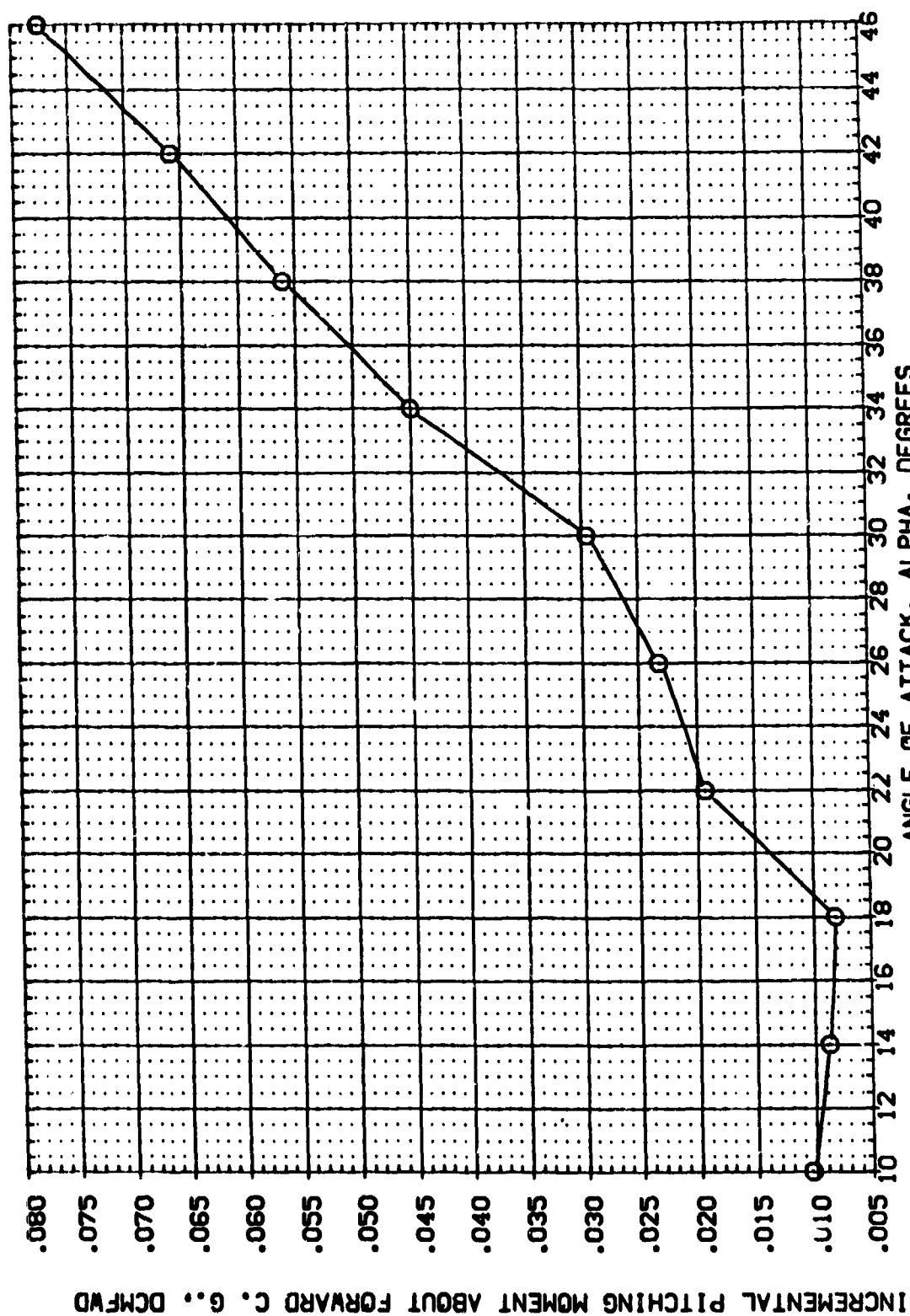


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

(A)MACH = 7.32

[illegible]

ANGLE OF ATTACK. ALPHA. DEGREES

FIG. 9 ELEVEN EFFECTIVENESS; RN/L=3.0, BOFLAP=-11.7

(A)MACH = 7.32

DATA: SET SYMBOL CONFIGURATION DESCRIPTION
 (EEF009) ○ ARES 3.5-176 0487 140 A/B ORBITER

DE SP0BRK BDFLAP RN/L 3.000
 -40.000 55.000 -11.700 3.000

REFERENCE INFORMATION
 SREF 2650.0000 50. FT.
 LREF 1250.3000 IN.
 BREF 936.6800 IN.
 YPRP 1076.4800 IN.
 YPRP 375.0000 IN.
 ZPRP 375.0000 IN.
 SCALE .0150 SCALE

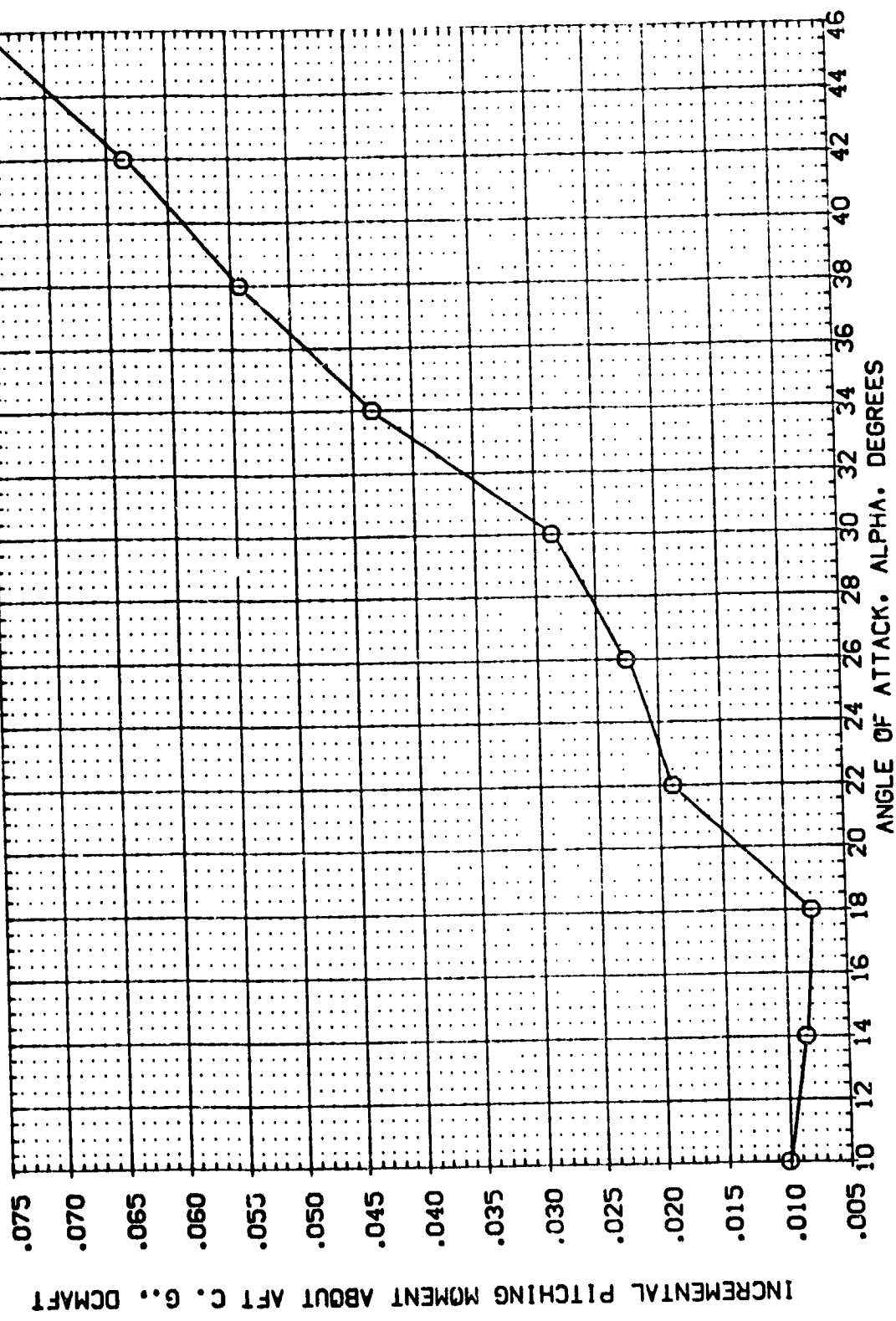


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

(AJMACH = 7.32

AMES 3.5-176 OA87 140 A/B ORBITER (FEF009)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	ELEVON	DATASET	ELEVON	REFERENCE INFORMATION
○	10.000		BETA	.000	FEF009	FEF008	.000	SREF 2690.0000 SQ.FT.
□	20.000	AILRON	BOFLAP	-11.700	FEF009	FEF008	.000	LREF 1290.3000 IN.
◇	30.000	RUDER	SPOBRK	55.000				BREF 936.6800 IN.
△	40.000	RVL						XPRP 1076.4800 IN.
								YPRP .0000 IN.
								ZPRP 375.0000 IN.
								SCALE .0150

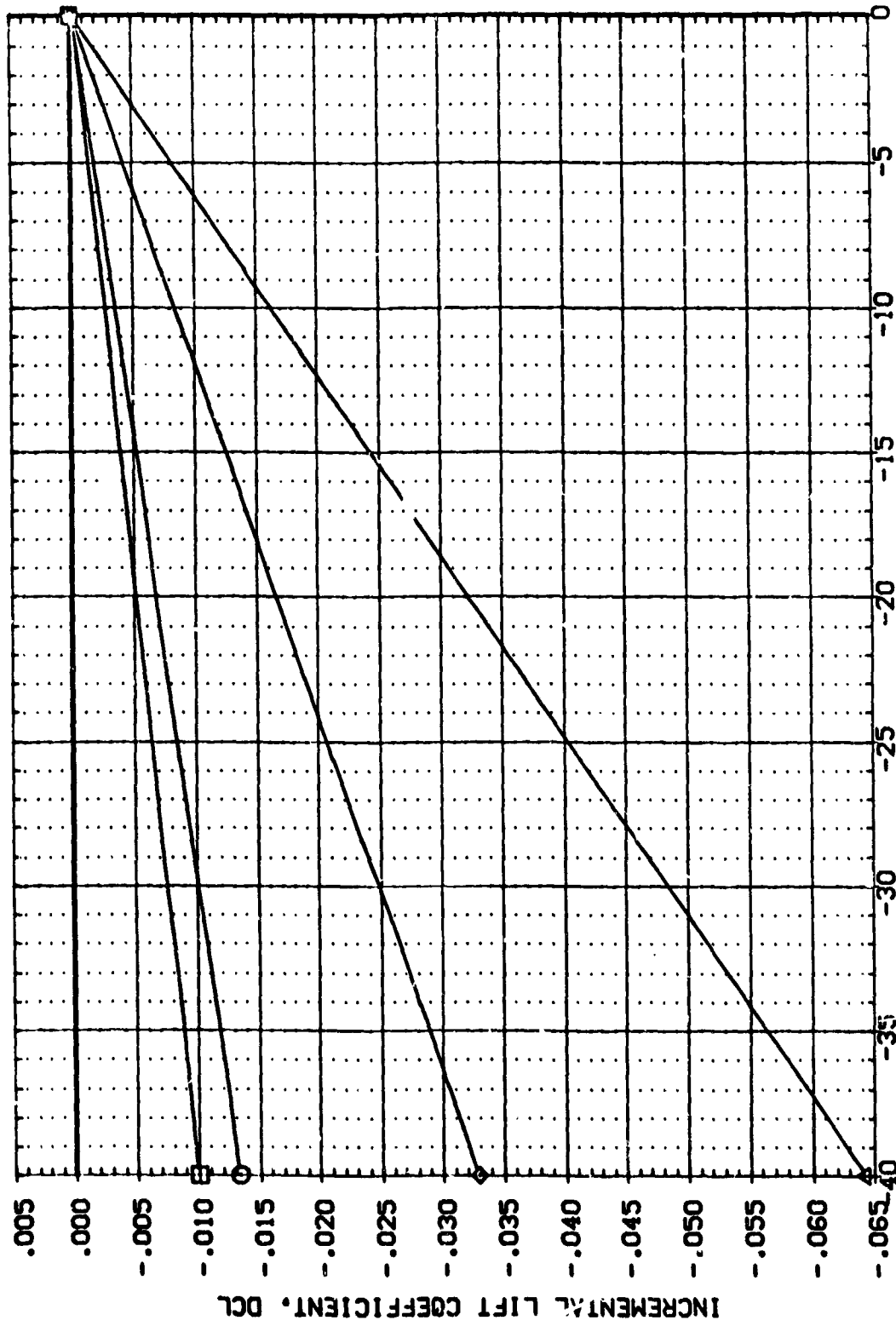


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

AMES 3.5-176 0A87 140 A/B ORBITER (FEF009)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	ELEVON	FEF009	FEF008	ELEVON	SREF	REFERENCE INFORMATION	SO.FT.
□	10.000		7.320	BETA	.000	.000	.000	.000	LREF	2690.0000	IN.
□	20.000	AIRLON	.000	BDFLAP	-11.700	FEF009	FEF008	.000	BREF	1290.3700	IN.
◇	30.000	RUDDER	.000	SPOBRK	55.000			.000	XREF	936.6600	IN.
△	40.000	RVL	3.000					.000	YREF	1076.4800	IN.
								.000	ZREF	375.0000	IN.
								.0150	SCALE		

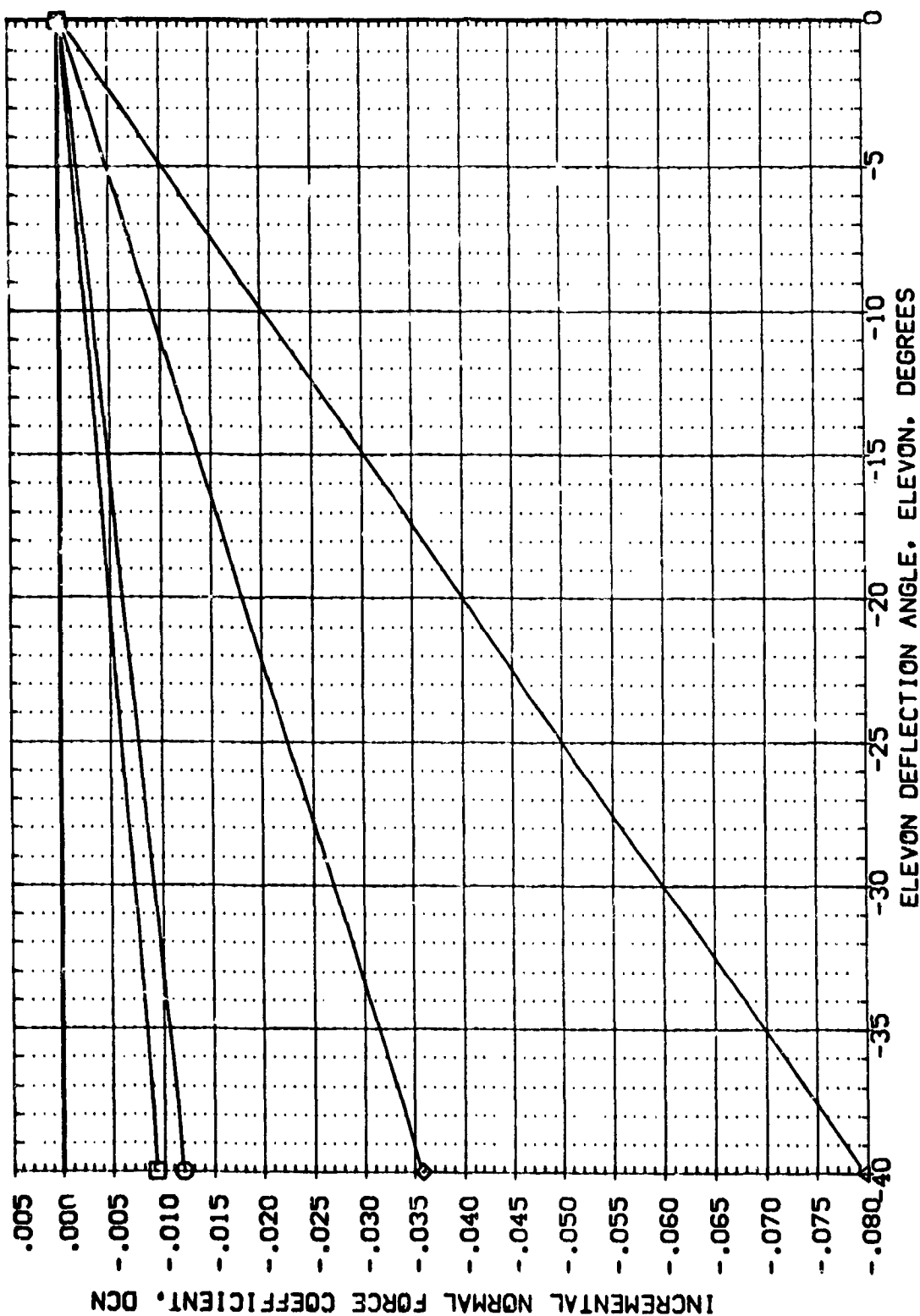


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

AMES 3.5-176 0A87 140 A/B ORBITER (FEF009)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	ELEVON	DATASET	ELEVON	SREF	REFERENCE INFORMATION
○	10.000		BETA	.000	FEF009	.000	REF	2690.0000	50. FT.
□	20.000	AILRON	BDFLAP	-11.700	FEF009	.000	REF	1290.3000	IN.
◇	30.000	RUDER	SPDRK	55.000			REF	936.6800	IN.
△	40.000	RN/L	3.000				REF	1076.4800	IN.
							REF	375.0000	IN.
							SCALE	.0150	SCALE

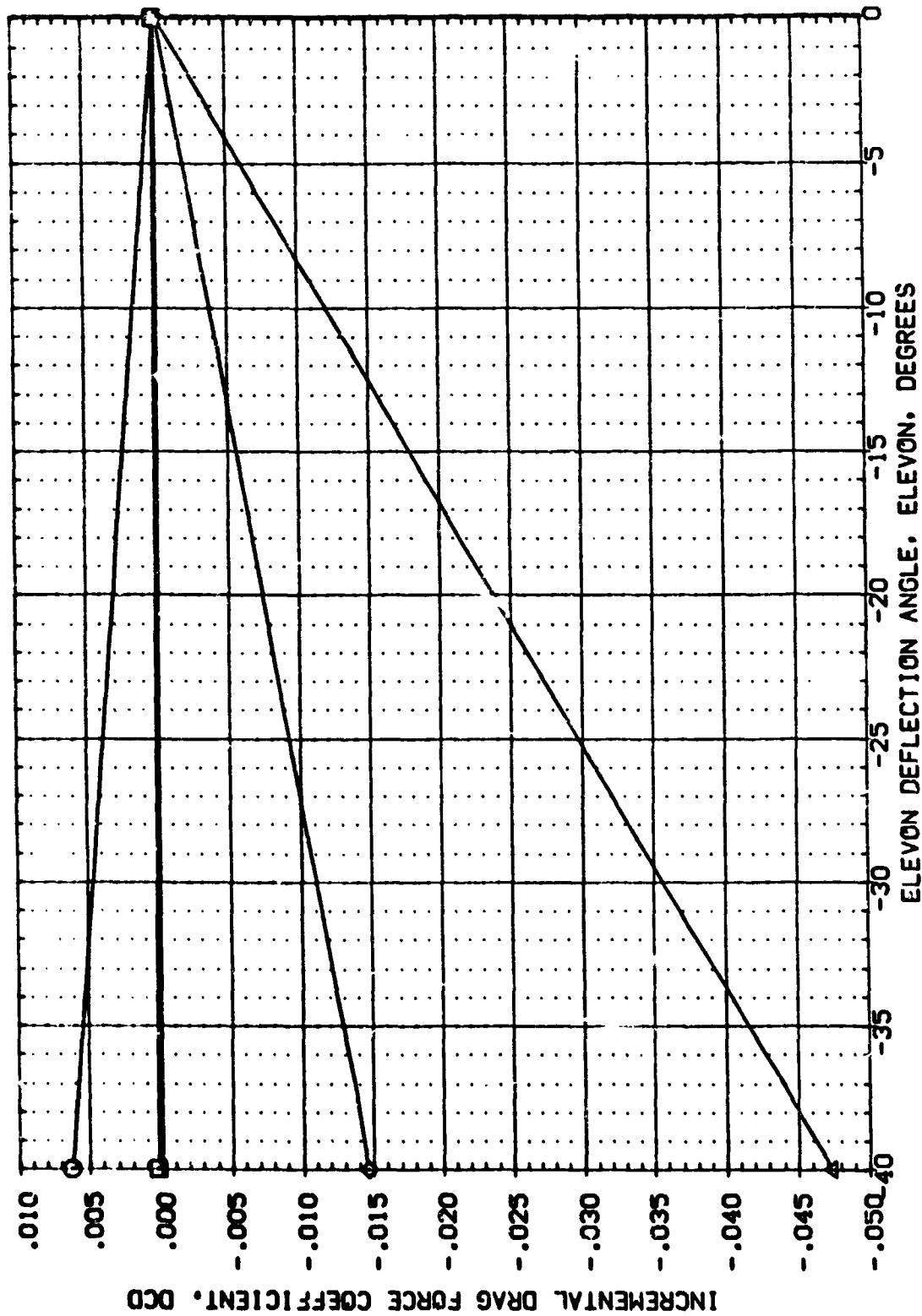


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

(FEF009)

AMES 3.5-176 0A87 140 A/B ORBITER

SYMBOL		PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
○	ALPHA	MACH	BETA	ELEVON	FEF008	SREF	SC.FT.
□	10.000	7.320	.000	.000		LREF	IN.
◇	20.000	.000	BOFLAP			BREF	IN.
△	30.000	.000	SPOERK			XREF	IN.
	40.000	3.000				YREF	IN.
						ZREF	IN.
						SCALE	SCALE

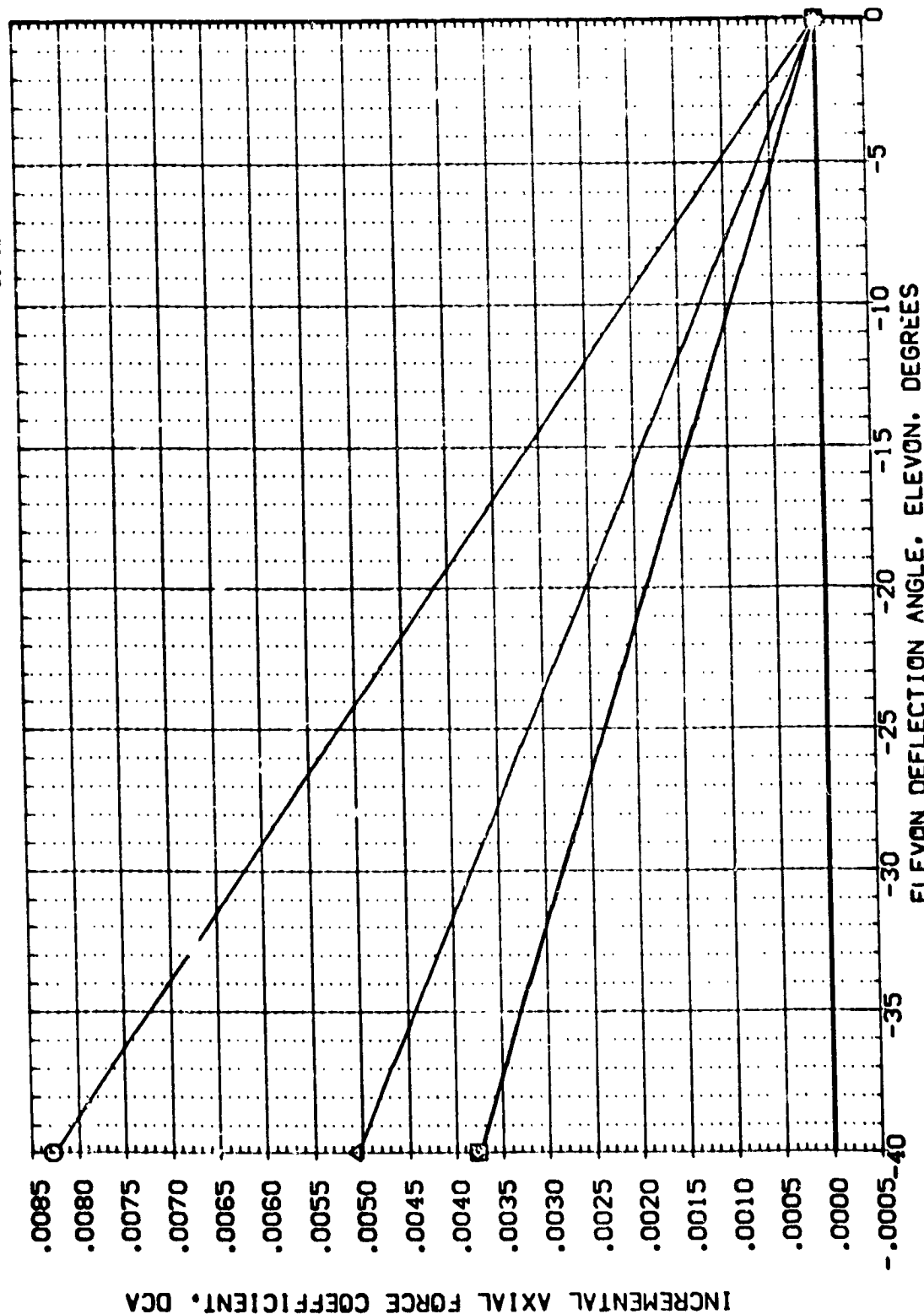


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

(FEF009)

AMES 3.5-176 0A87 140 A/B ORBITER

SYMBOL		ALPHA		PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
○ □ ◇ △	10.000	MACH	7.320	BETA	.000	ELEVON	SREF	2690.0000	
	20.000	AIRLON	.000	BOFLAP	-11.700	FEF009	LREF	1290.3000	
	30.000	RUDDER	.000	SPOBRK	55.000		BREF	936.6900	
	40.000	RNVL	3.000				XREF	1076.4800	
							YREF	.0000	
							ZREF	.0000	
								IN.	375.0000
								SCALE	.0150

(FFFFF)

REFERENCE INFORMATION		SD. FT.
REF	2690.0000	IN.
REF	1290.3000	IN.
REF	936.6800	IN.
REF	1076.4800	IN.
REF	.0000	IN.
REF	375.0000	IN.
SCALE	.0150	SCALE

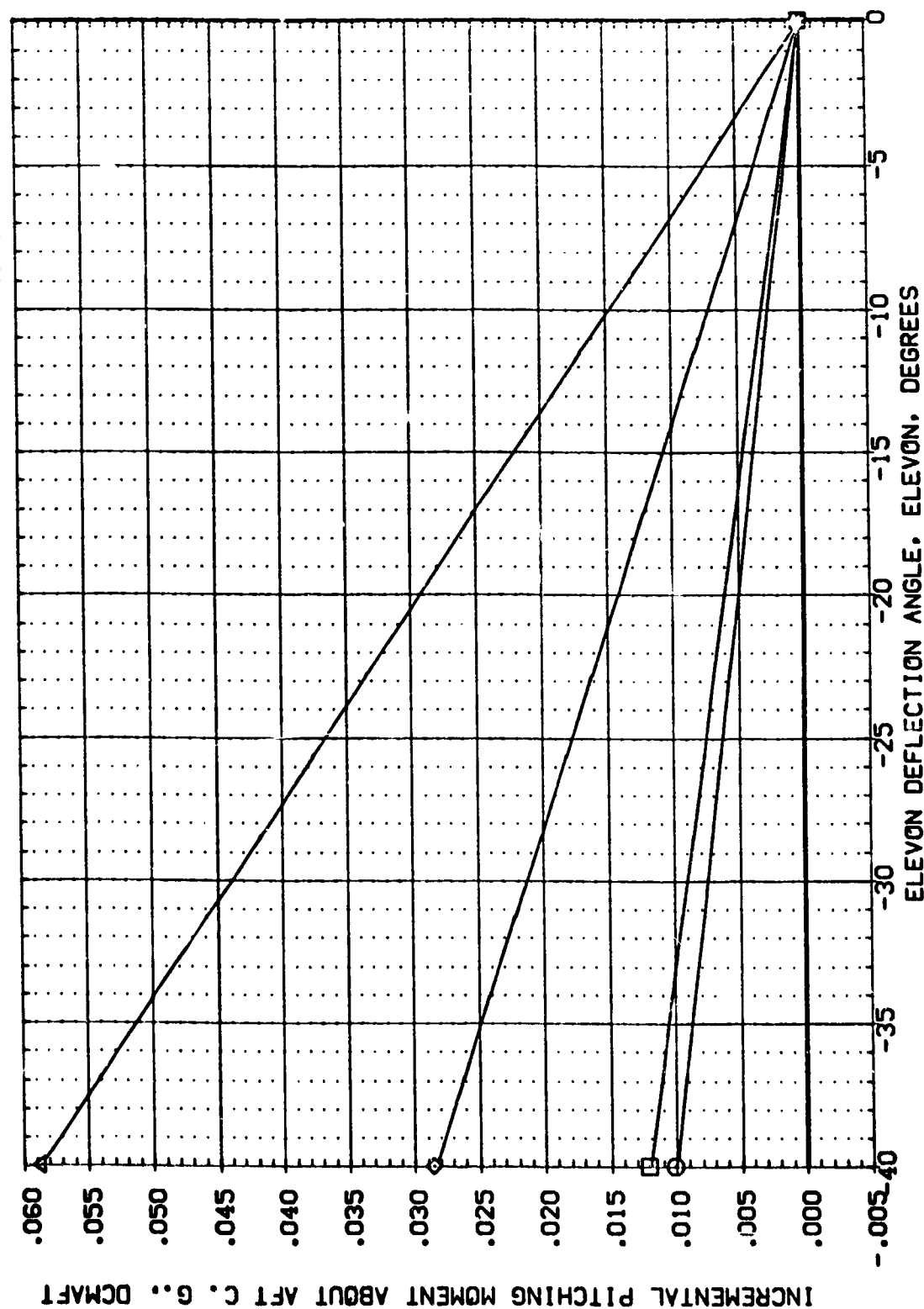


FIG. 9 ELEVON EFFECTIVENESS, $RN/L=3.0$, $BD\Delta P=-11.7$

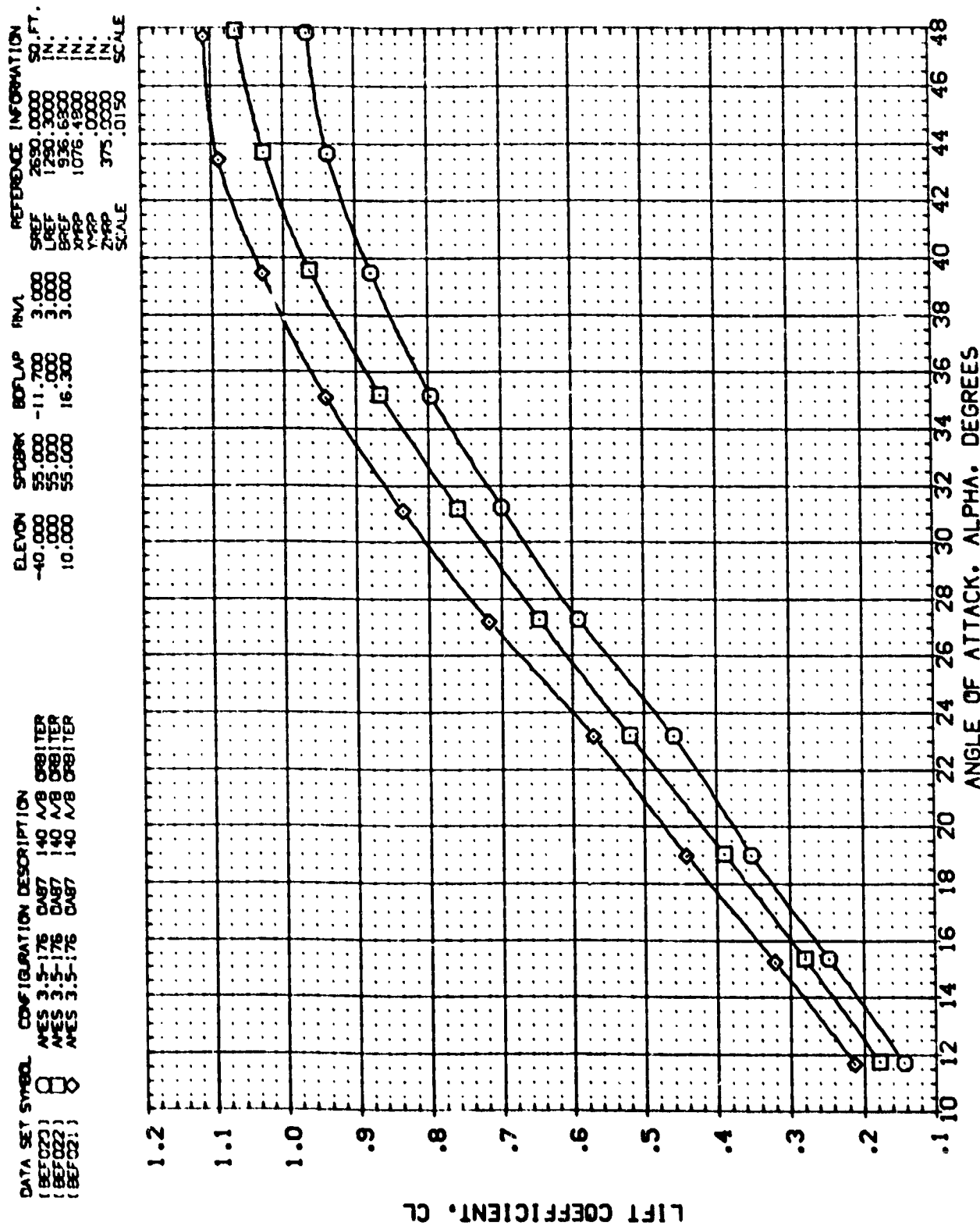


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0
(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORON	BODYFLAP	RNAL	REFERENCE INFORMATION
(BEFO20)	AVES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2650.0000 SO.FT.
(BEFO22)	AVES 3.5-176 CAB7 140 A/B ORBITER	.000	55.000	.000	3.000	LREF 1250.3000 IN.
(BEFO21)	AVES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	BREF 936.6800 IN.
						XREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

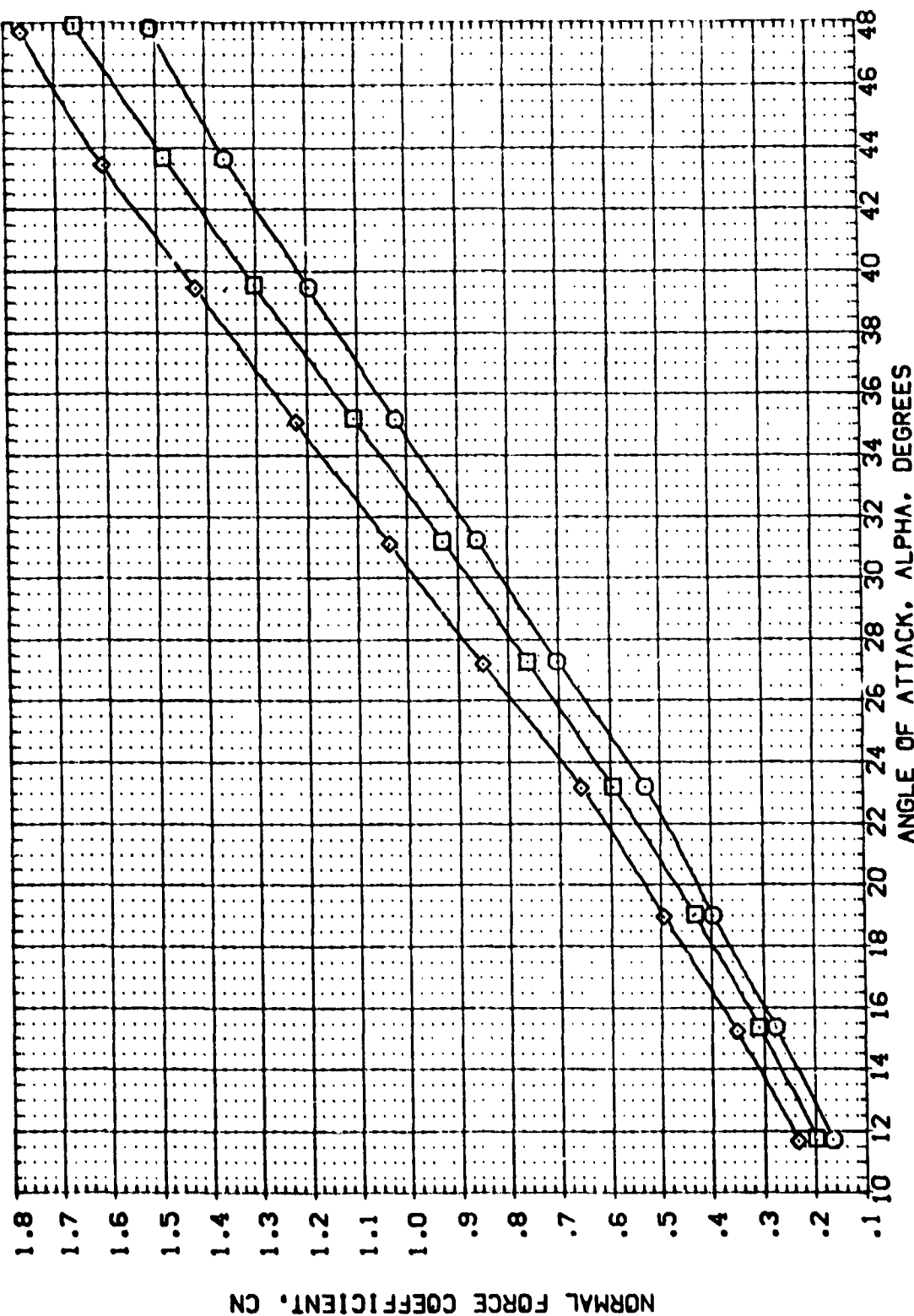


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BD/LAP	RN/L	REFERENCE INFORMATION
(BEFC20)	AVES 3.5-176 DAG7 140 A/B O8B/ITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
(BEFC22)	AVES 3.5-176 DAG7 140 A/B O8B/ITER	.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEFC21)	AVES 3.5-176 DAG7 140 A/B O8B/ITER	10.000	55.000	16.300	3.000	BREF 936.6800 IN.
						YREF 1076.4800 IN.
						ZREF .0000 IN.
						SCAL 373.0000 IN.
						SCALE .0150

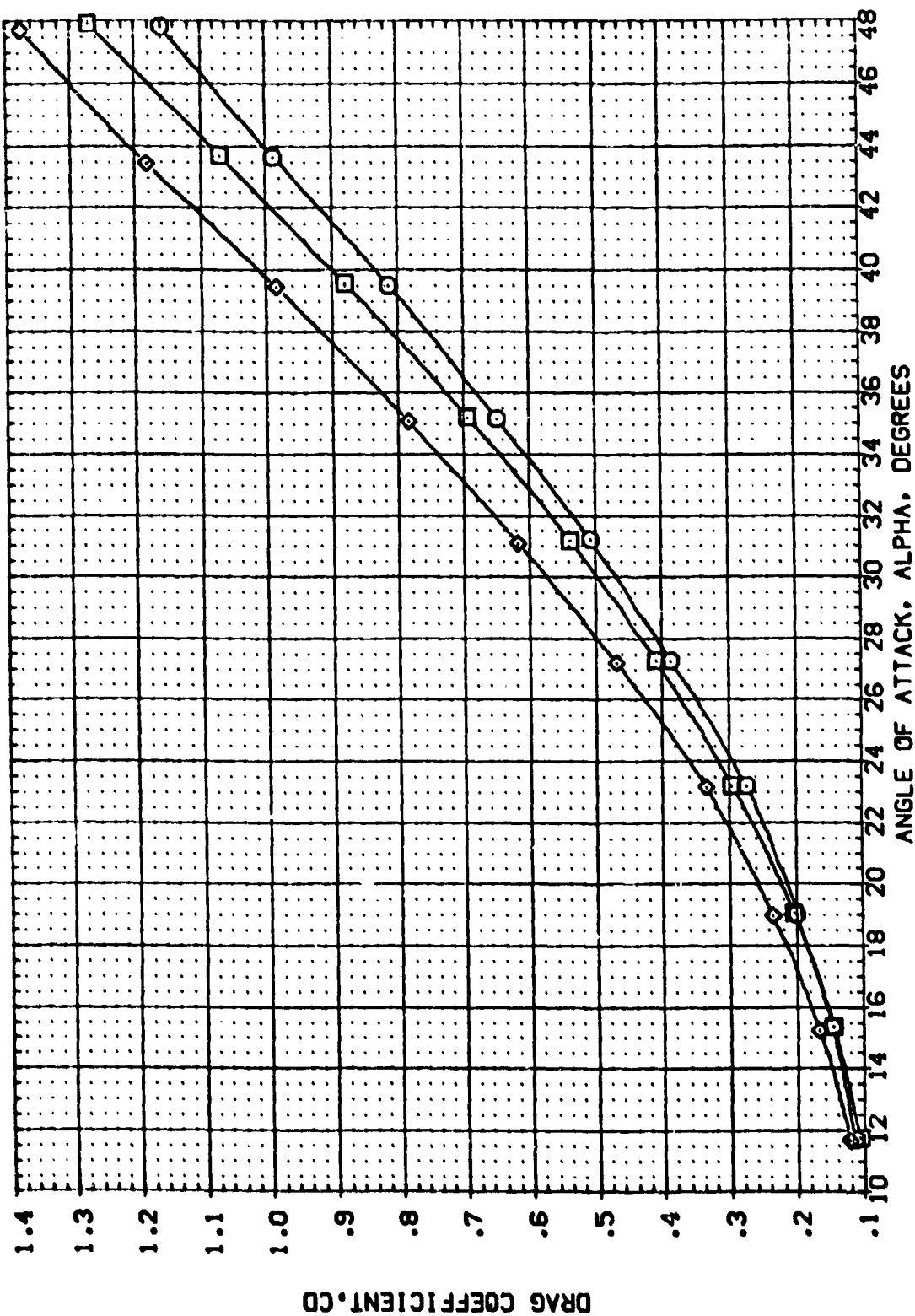


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 5.26

DATA	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BDFLAP	RN/L	REFERENCE INFORMATION
(BES-10)	○	AVES 3.5-176 DAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SO.FT.
(BES-022)	□	AVES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	LREF 1250.3000 IN.
(BES-021)	◇	AVES 3.5-176 CAB7 140 A/B ORBITER					BREF 936.6200 IN.
							XMREF 1076.4800 IN.
							YMREF .0000 IN.
							ZMREF .0000 IN.
							SCALE .0150

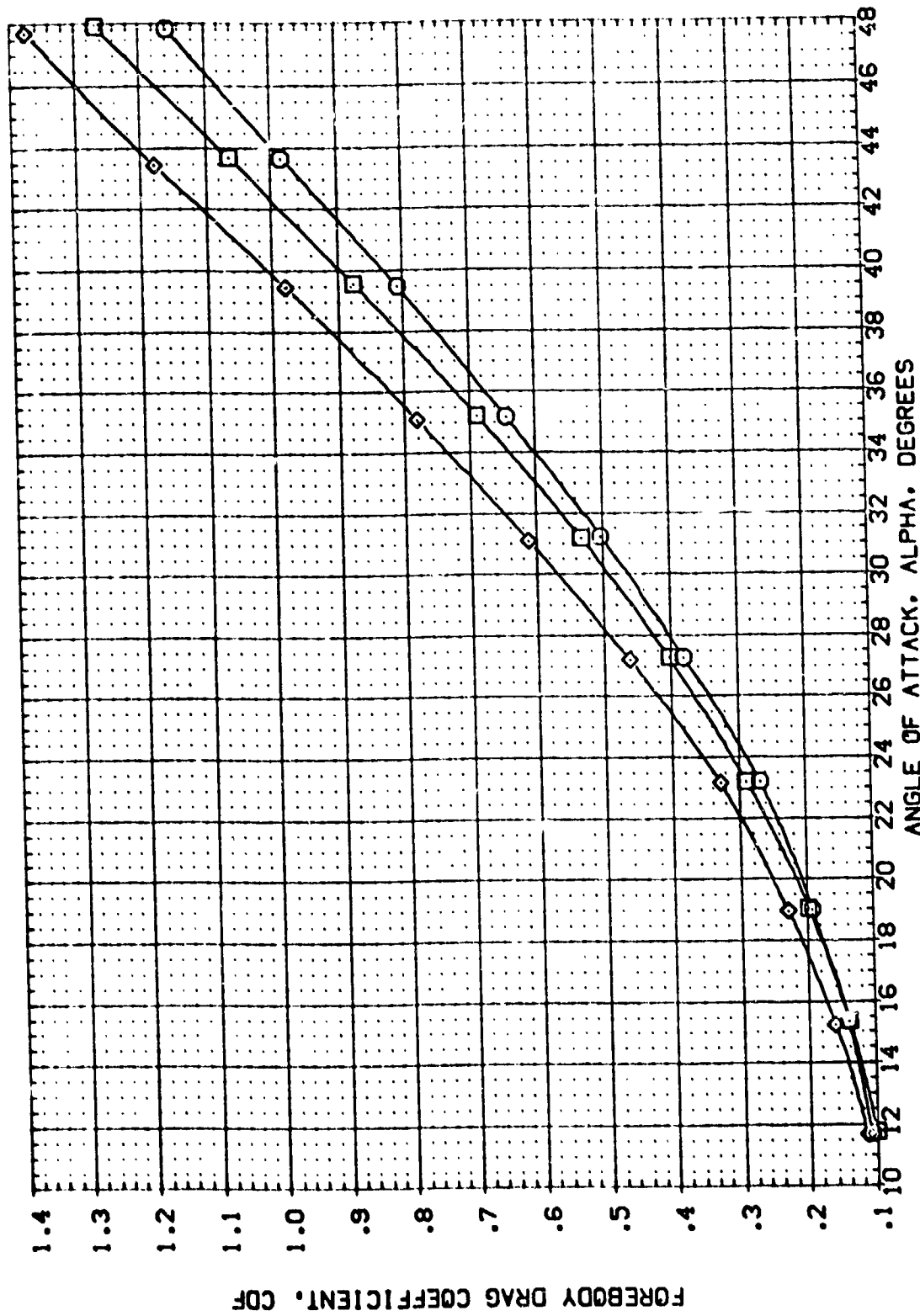


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF020)	AVES 3.5-176 DAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2650.0000 SO.FT.
(BEF021)	AVES 3.5-176 DAB7 140 A/B ORBITER	0.000	55.000	0.000	3.000	LREF 1250.3000 IN.
(BEF022)	AVES 3.5-176 DAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	BREF 936.6800 IN.
						YREF 1076.4800 IN.
						ZREF 375.0000 IN.
						SCALE .0150

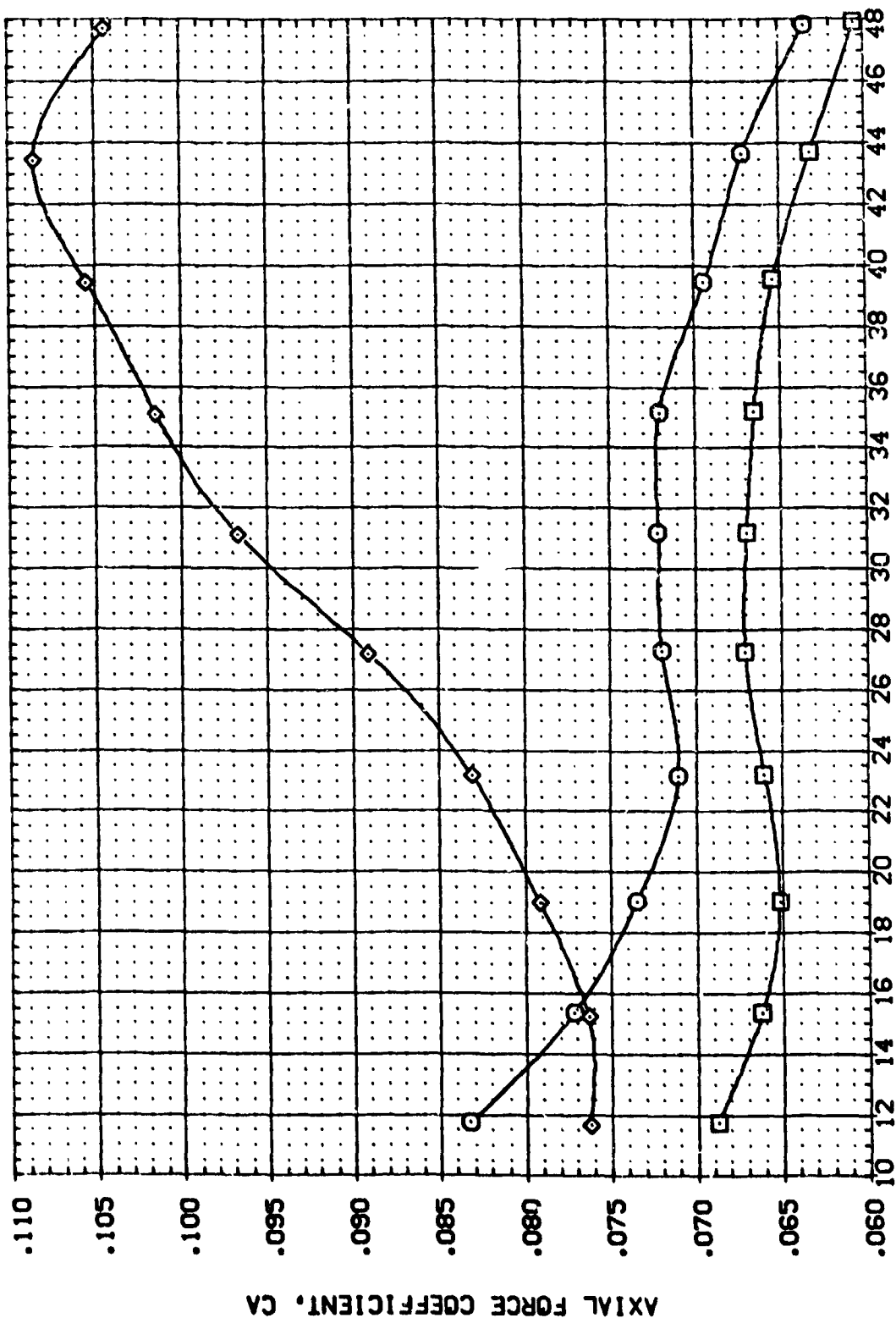


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, $RN/L=3.0$
 (A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFD20)	AVES 3.5-176 DAB7 140 A/B DRBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ. FT.
(BEFD22)	AVES 3.5-176 DAB7 140 A/B DRBITER	10.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEFD21)	AVES 3.5-176 DAB7 140 A/B DRBITER					BREF 936.6800 IN.
						XPRP 1076.4800 IN.
						YPRP .0000 IN.
						ZPRP .0000 IN.
						SCALE .0150

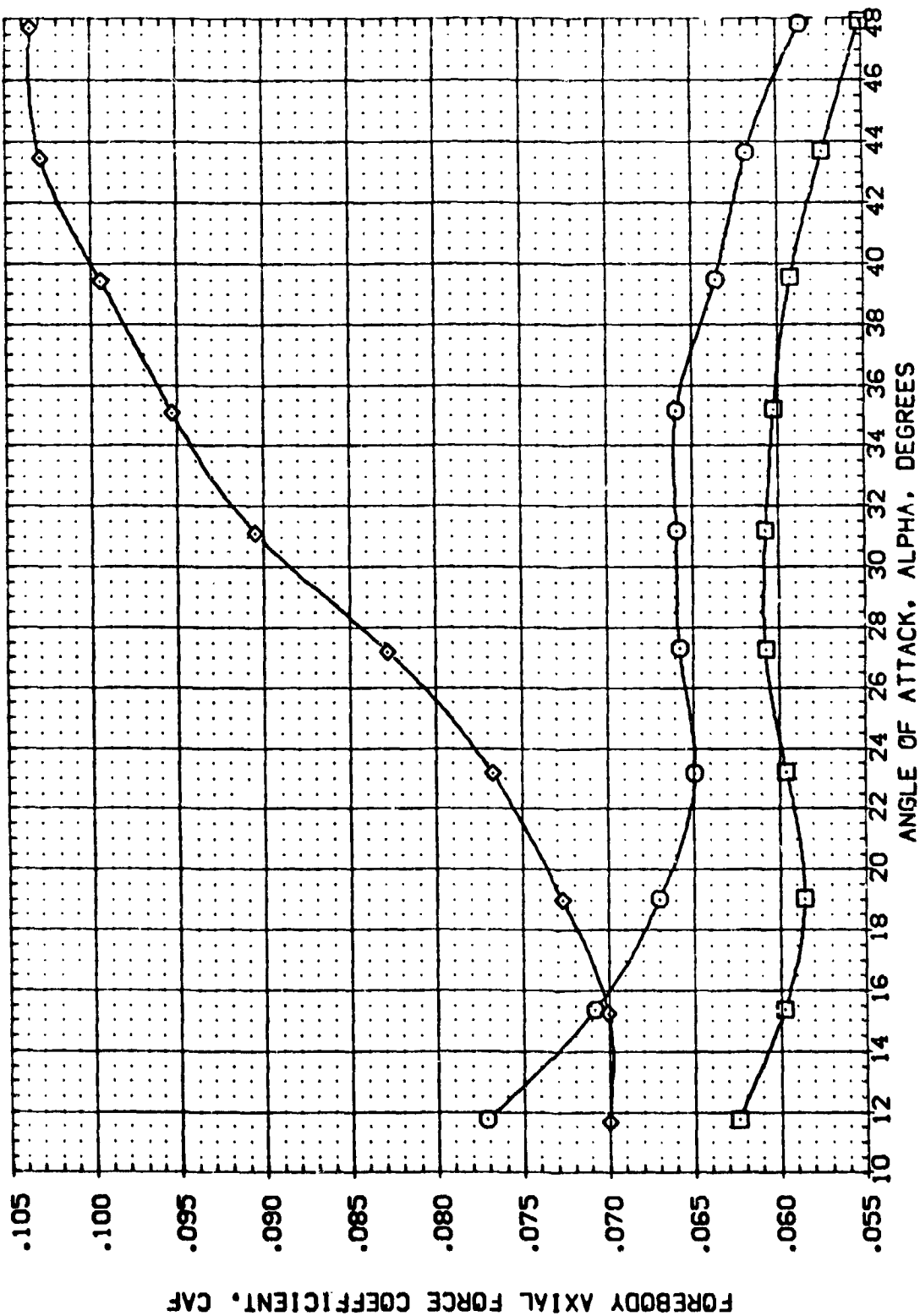


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORWK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF020)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SO.FT.
(BEF022)	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEF021)	AVES 3.5-176 OAB7 140 A/B ORBITER		55.000		3.000	BREF 936.6800 IN.
						YMRP 1076.4800 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

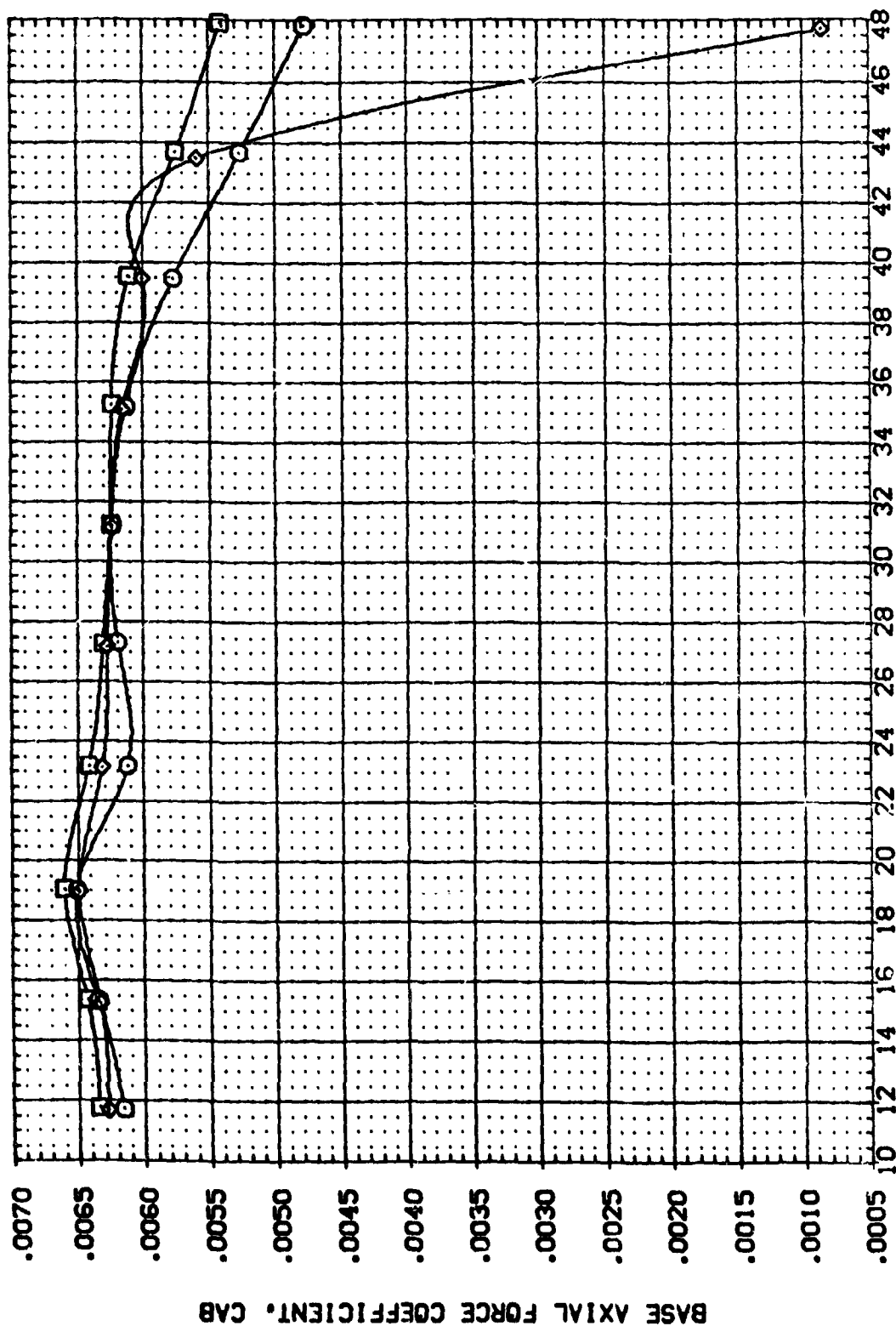


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF020)	AVES 3.5-176 CAB7 140 A/B CRBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
(BEF022)	AVES 3.5-176 CAB7 140 A/B CRBITER	10.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEF021)	AVES 3.5-176 CAB7 140 A/B CRBITER					BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP 375.0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

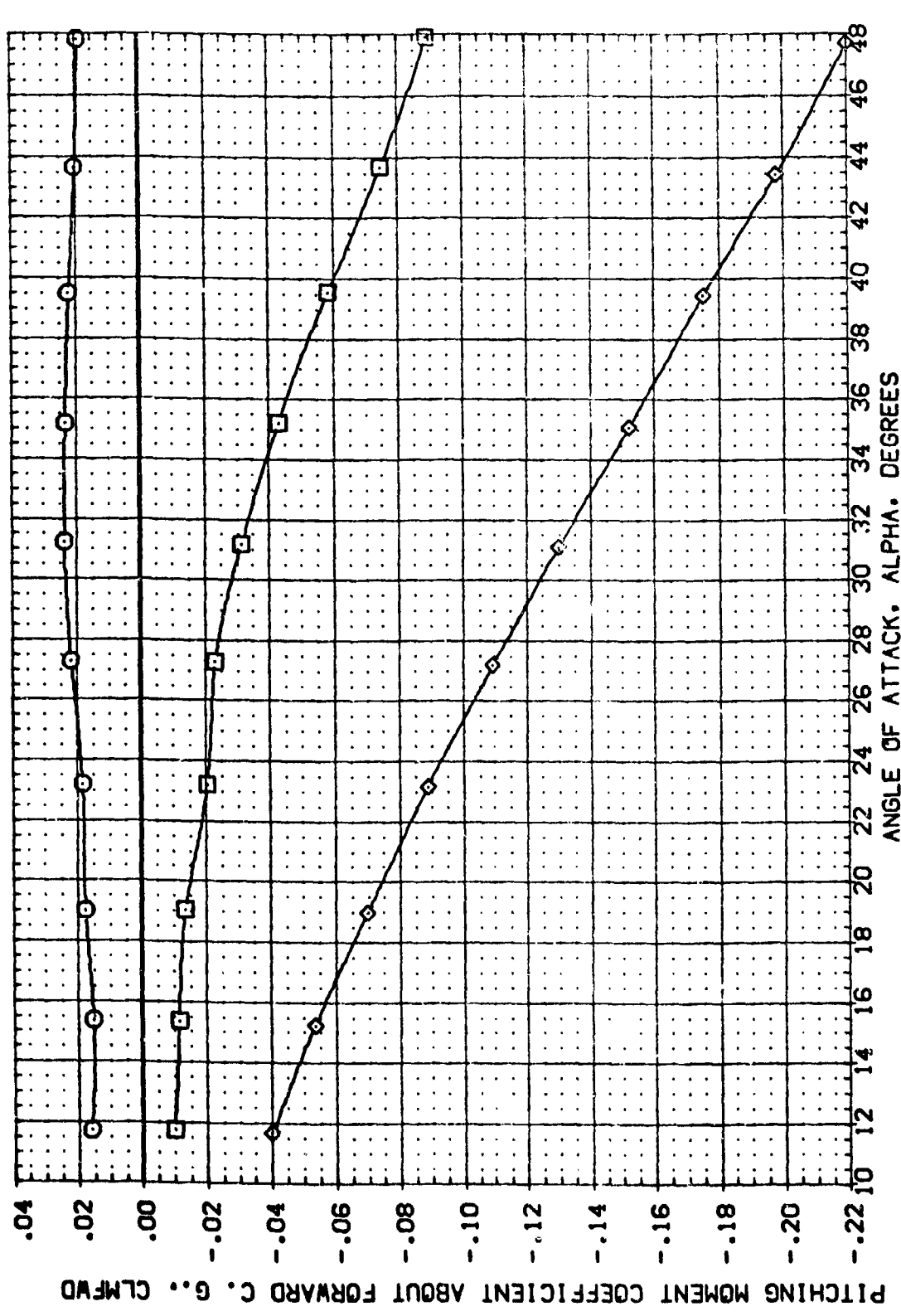


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 5.26

DATA SET SYMBL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF020)	AVES 3.5-176 CA87 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 50.FT.
(BEF022)	AVES 3.5-176 CA87 140 A/B ORBITER	10.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEF021)	AVES 3.5-176 CA87 140 A/B ORBITER		55.000			BREF 936.6801 IN.
						XTRP 1076.4600 IN.
						YTRP 375.0000 IN.
						ZTRP 3150 SCALE

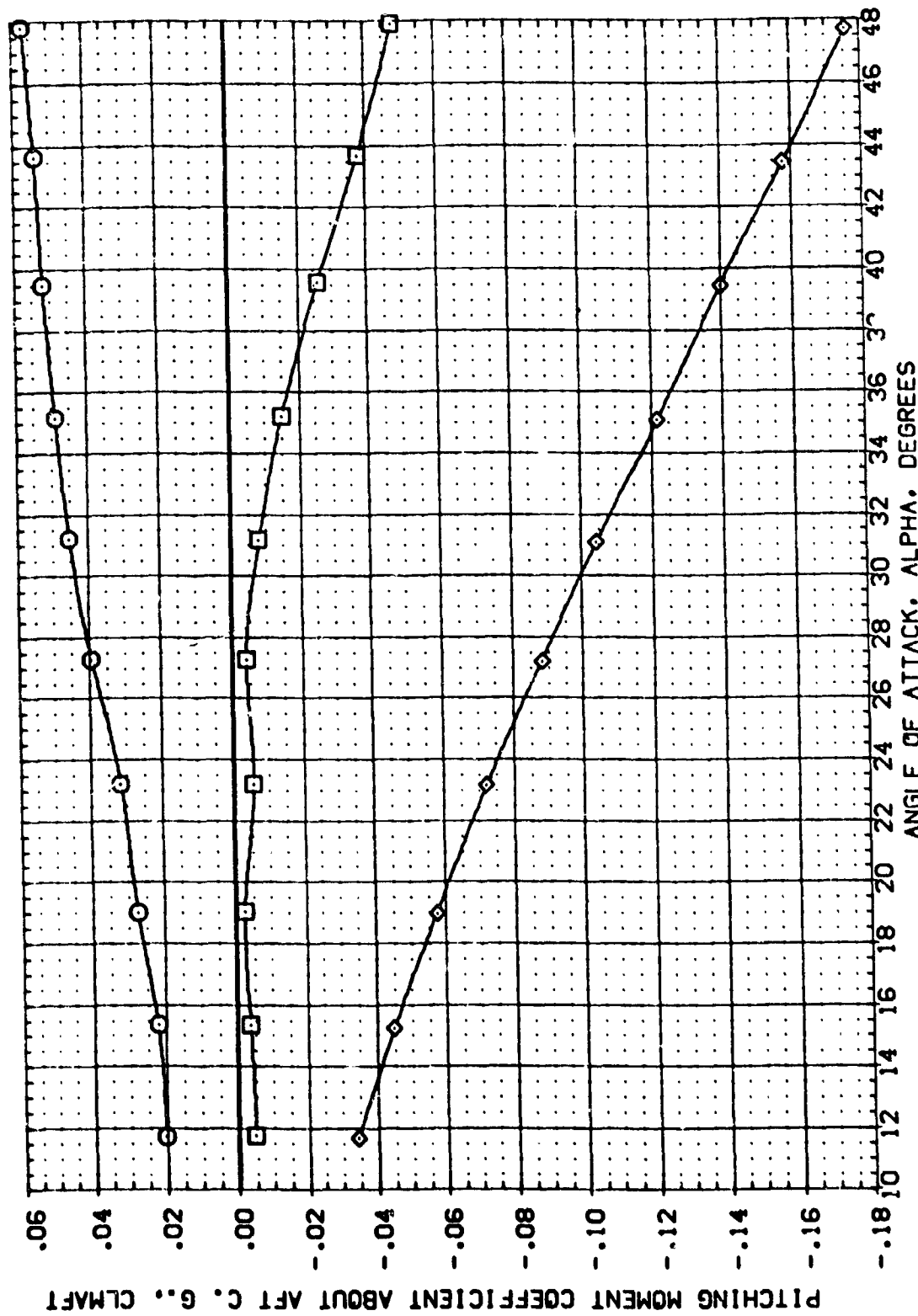


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFO20)	AMES 3.5-176 DAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2590.0000 SO.FT.
(BEFO22)	AMES 3.5-176 DAB7 140 A/B ORBITER	.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEFO21)	AMES 3.5-176 DAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

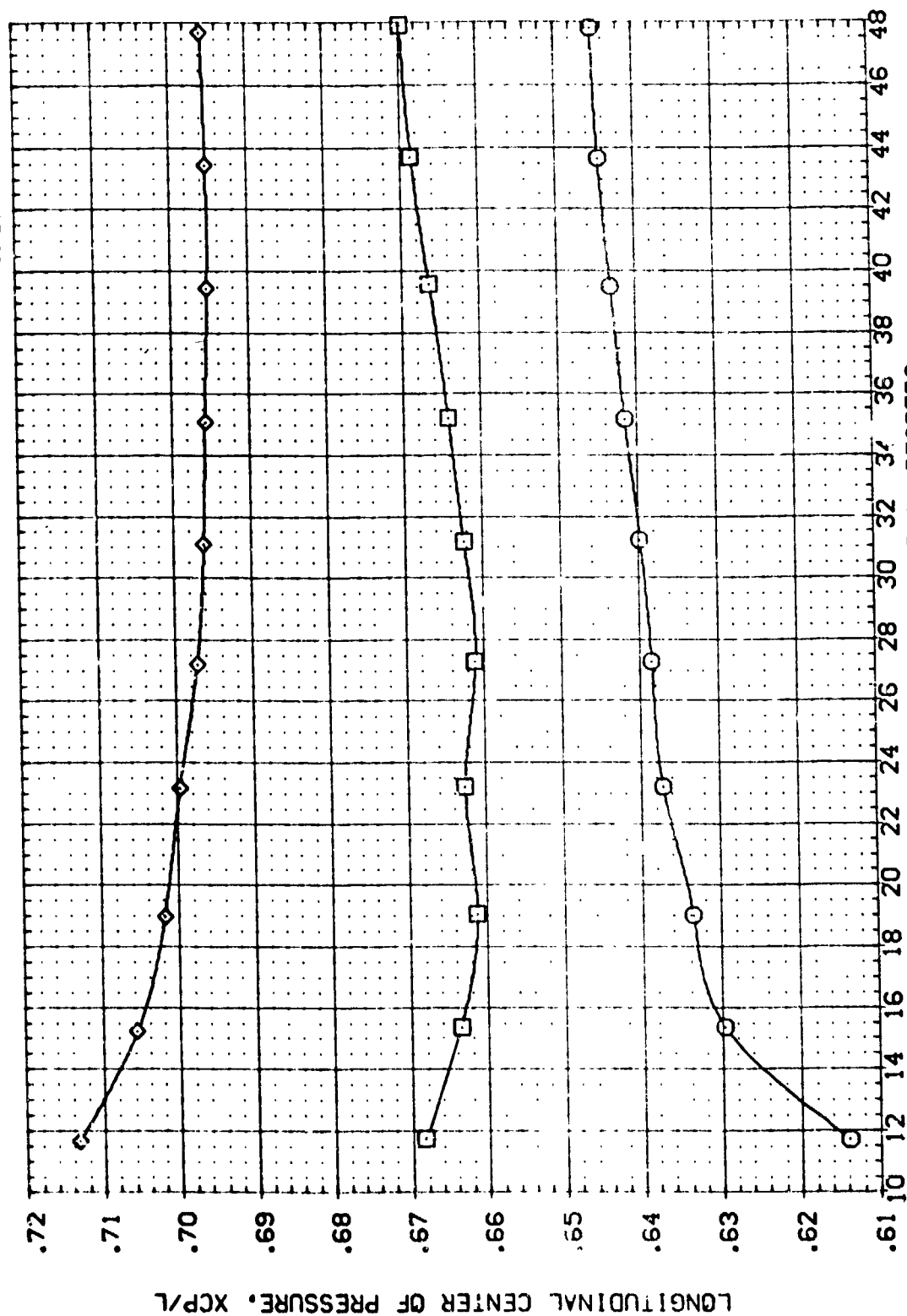


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, $RN/L=3.0$

(A)MACH = 5.26

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOILER	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF020)	□	A-ES 3.5-176 OAB7 140 A/B OAB7TER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
(BEF022)	□	A-ES 3.5-176 OAB7 140 A/B OAB7TER	10.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEF021)	□	A-ES 3.5-176 OAB7 140 A/B OAB7TER					BREF 936.6800 IN.
							MREF 1076.4800 IN.
							MREF 375.0000 IN.
							ZMREF .0150 SCALE

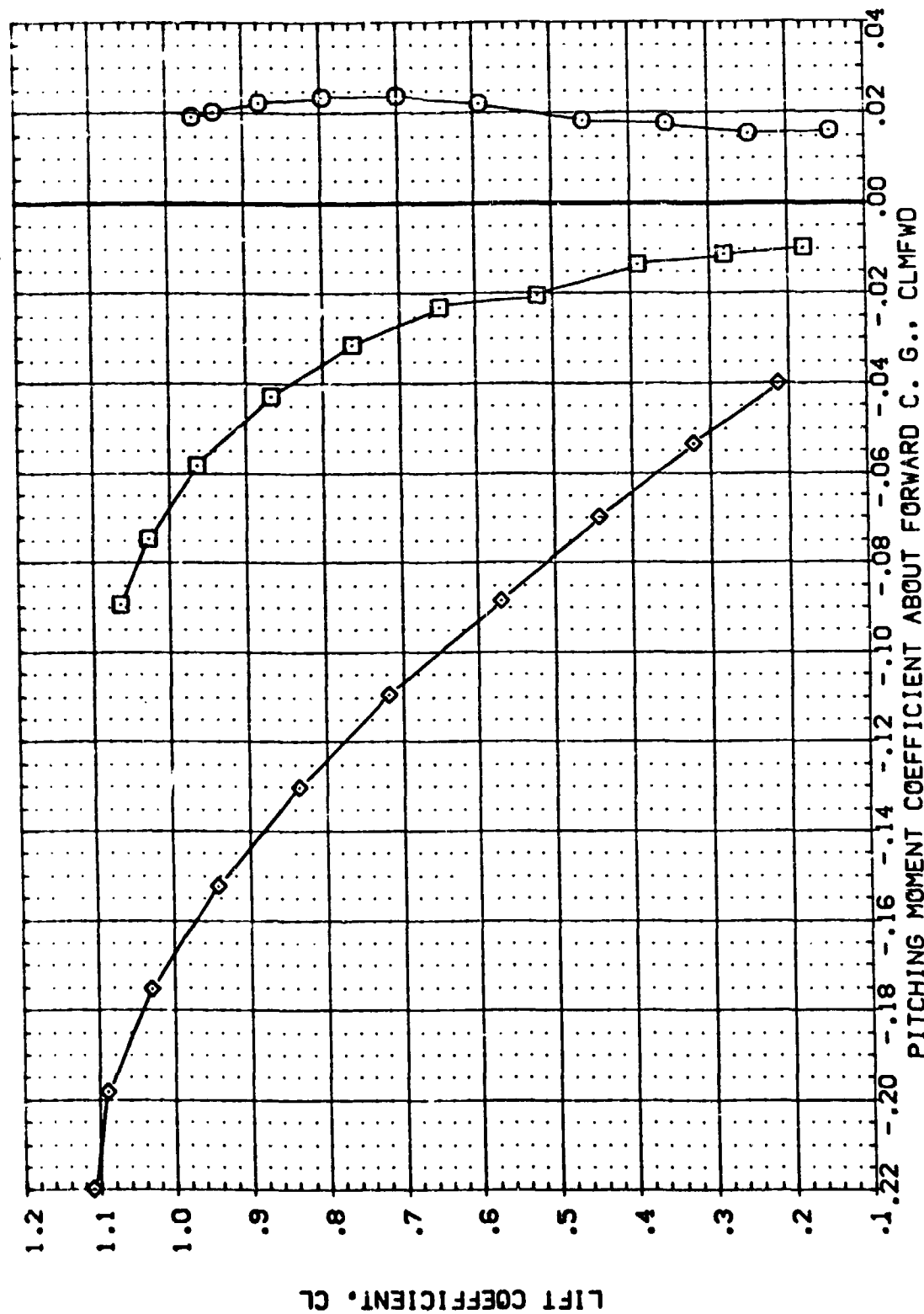
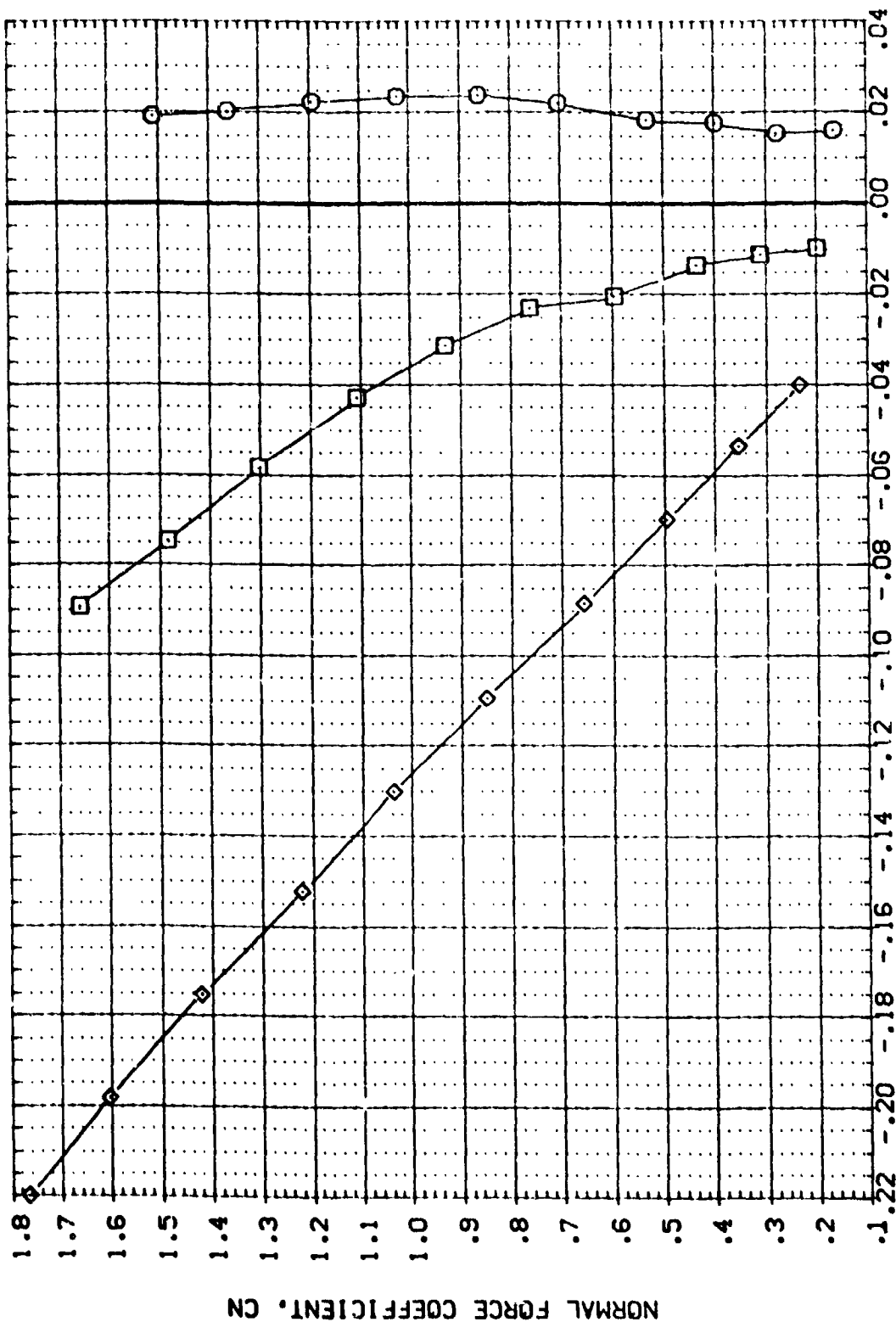


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDBRK	BDYFLAP	RN/L	REFERENCE INFORMATION
(BEFC20)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
(BEFC22)	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEFC21)	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	BREF 936.6800 IN.
						YMRP 1076.4600 IN.
						ZMRP 375.0000 IN.
						SCALE .0150



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FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOILER	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF020)	AVES 3.5-176 0487 140 A/B 0981TER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
(BEF022)	AVES 3.5-176 0487 140 A/B 0981TER	10.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEF021)	AVES 3.5-176 0487 140 A/B 0981TER					BREF 935.6800 IN.
						XPRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

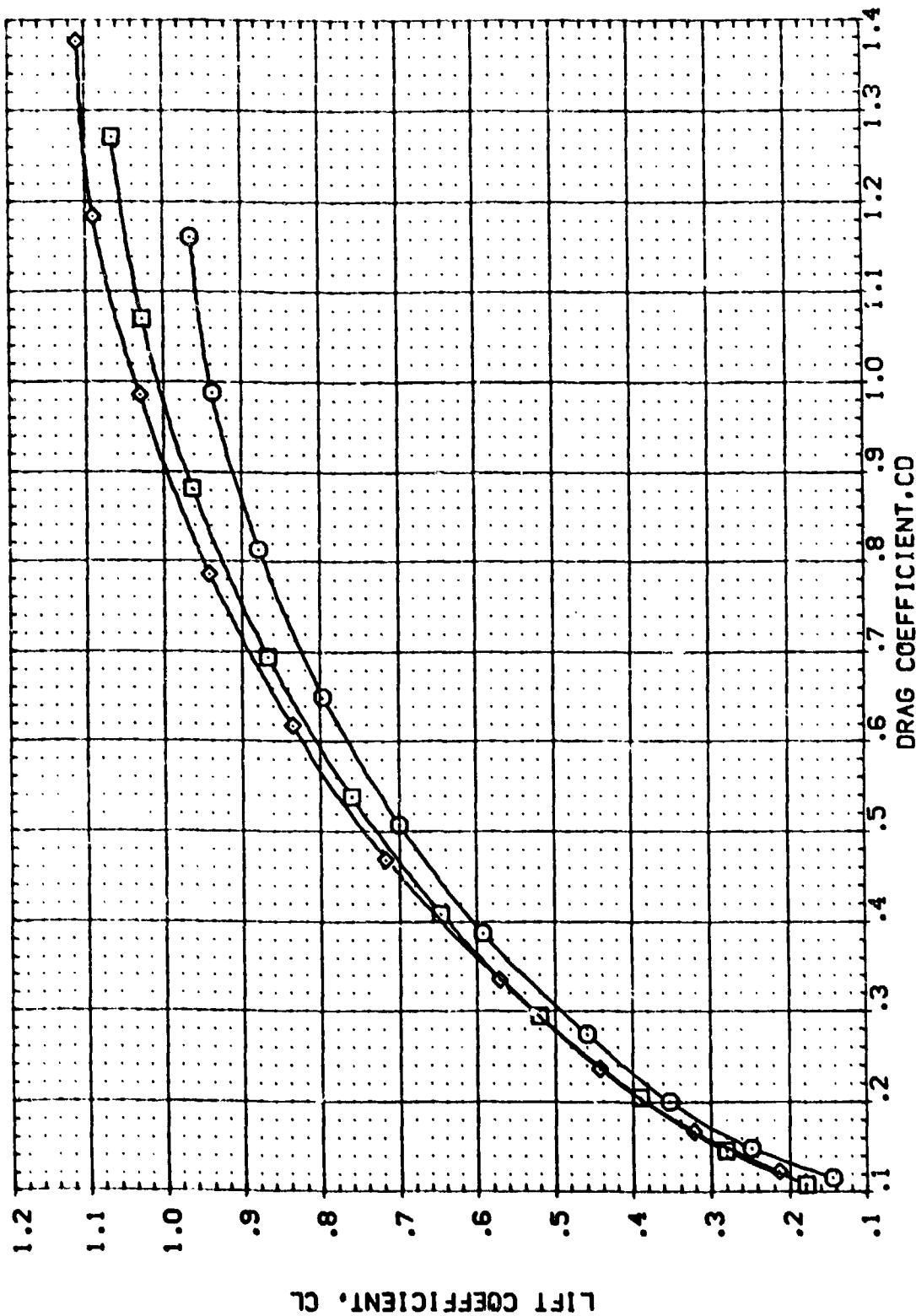


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPCRK	BOFLAP	RN/L	REFERENCE INFORMATION
(AE022)	AMES 3.5-176 OAB7 140 A/B DBB1TER	-10.000	55.000	-11.700	3.000	SREF 2650.0000 50. FT.
(AE022)	AMES 3.5-176 OAB7 140 A/B DBB1TER	10.000	55.000	16.300	3.000	LREF 1250.3000 N.
(AE022)	AMES 3.5-176 OAB7 140 A/B DBB1TER					BREF 536.6800 N.
						XREF 1076.4800 N.
						YREF 0000 N.
						ZREF 375.0000 N.
						SCALE .0150 SCALE

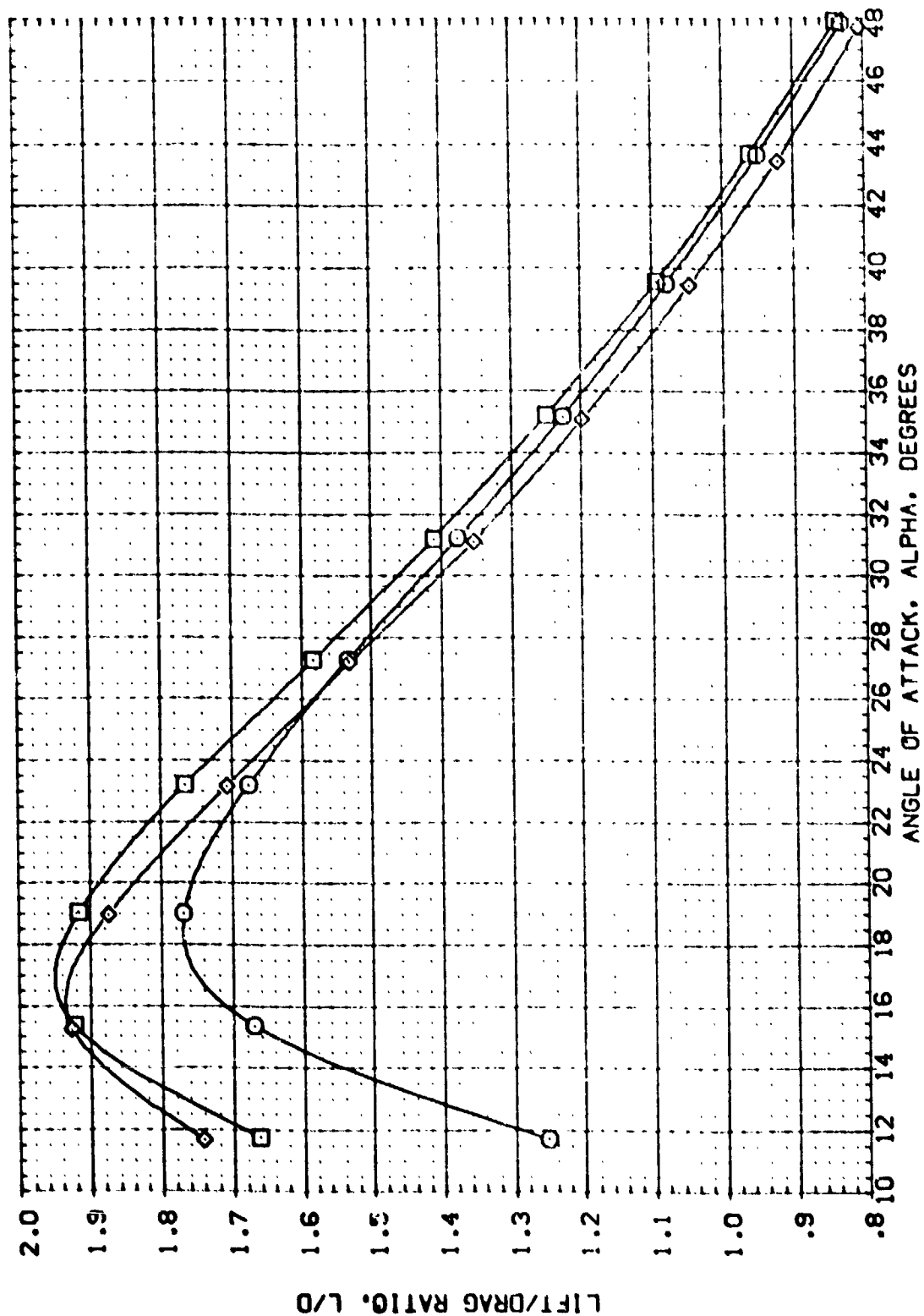


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF029)	AVES 3.5-176 CAB7 140 A/B DB81TER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
(BEF027)	AVES 3.5-176 CAB7 140 A/B DB81TER	-40.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEF026)	AVES 3.5-176 CAB7 140 A/B DB81TER	10.000	55.000	16.300	3.000	BREF 936.8800 IN.
(BEF028)	AVES 3.5-176 CAB7 140 A/B DB81TER					YREF 1076.4800 IN.
						YREF 375.0000 IN.
						SCALE .015C

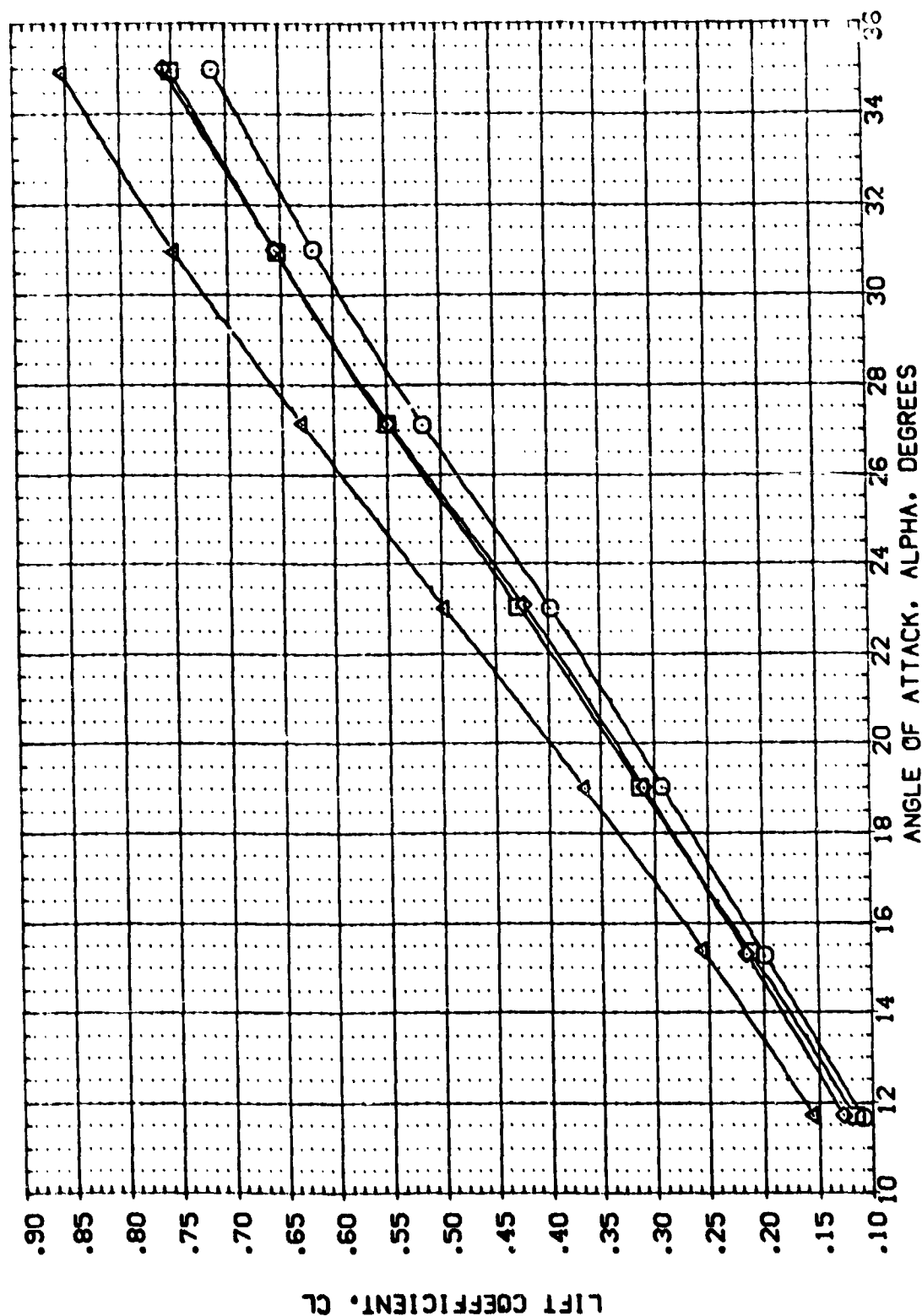


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS. RN/L=3.0

(A)MACH = 10.27

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFC29)	□	AVES 3.5-176 CAB7 140 A/B CAB7TER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SO.FT.
(BEFC27)	□	AVES 3.5-176 CAB7 140 A/B CAB7TER	-40.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEFC26)	□	AVES 3.5-176 CAB7 140 A/B CAB7TER	.000	55.000	16.300	3.000	BREF 936.6800 IN.
(BEFC28)	□	AVES 3.5-176 CAB7 140 A/B CAB7TER	10.000	55.000	16.300	3.000	XREF 1076.4800 IN.
							YREF 375.0000 IN.
							ZREF .0150 SCALE

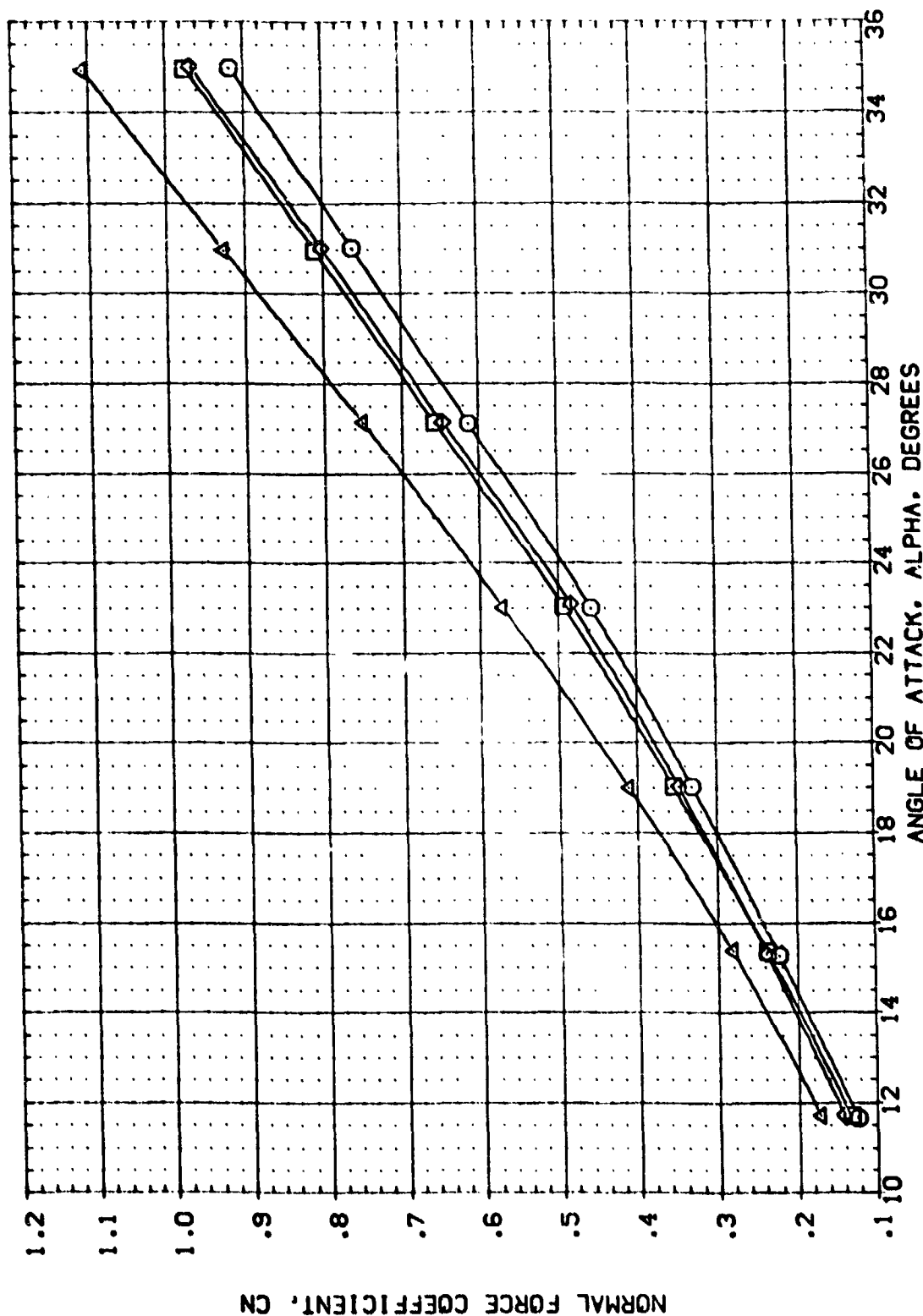


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 10.27

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORWK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF029)	□	AVES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2650.0000 SO.FT.
(BEF027)	○	AVES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	16.300	3.000	LREF 1750.3000 IN.
(BEF026)	△	AVES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	BREF 936.6800 IN.
(BEF028)	◇	AVES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	YREF 1076.4800 IN.
							ZREF 375.0000 IN.
							SCALE .0150

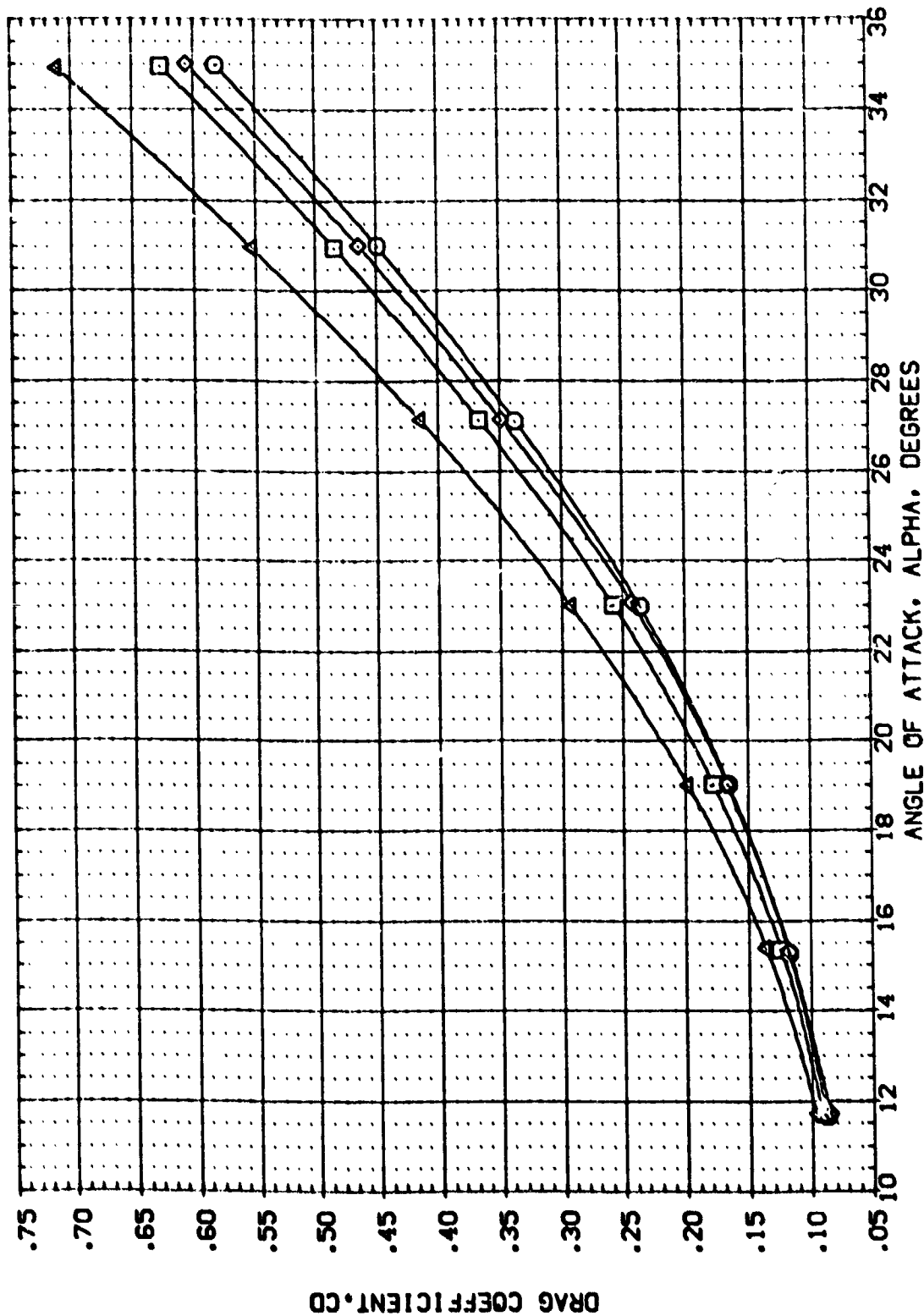


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0
(A)MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOROK	BDFLAP	RN/L	REFERENCE INFORMATION
(BFC29)	AVES 3.5-176 CAB7 140 A/B CPB1TER	-40.000	55.000	-11.700	3.000	SPREF 2650.0000 50. FT.
(BFC27)	AVES 3.5-176 CAB7 140 A/B CPB1TER	-40.000	55.000	16.300	3.000	LPREF 250.3000 50. FT.
(BFC26)	AVES 3.5-176 CAB7 140 A/B CPB1TER	10.000	55.000	16.300	3.000	BPREF 936.6800 50. FT.
(BFC28)	AVES 3.5-176 CAB7 140 A/B CPB1TER	10.000	55.000	16.300	3.000	MPREF 1076.4800 50. FT.
						ZREF 375.0000 50. FT.
						SCALE 0.150

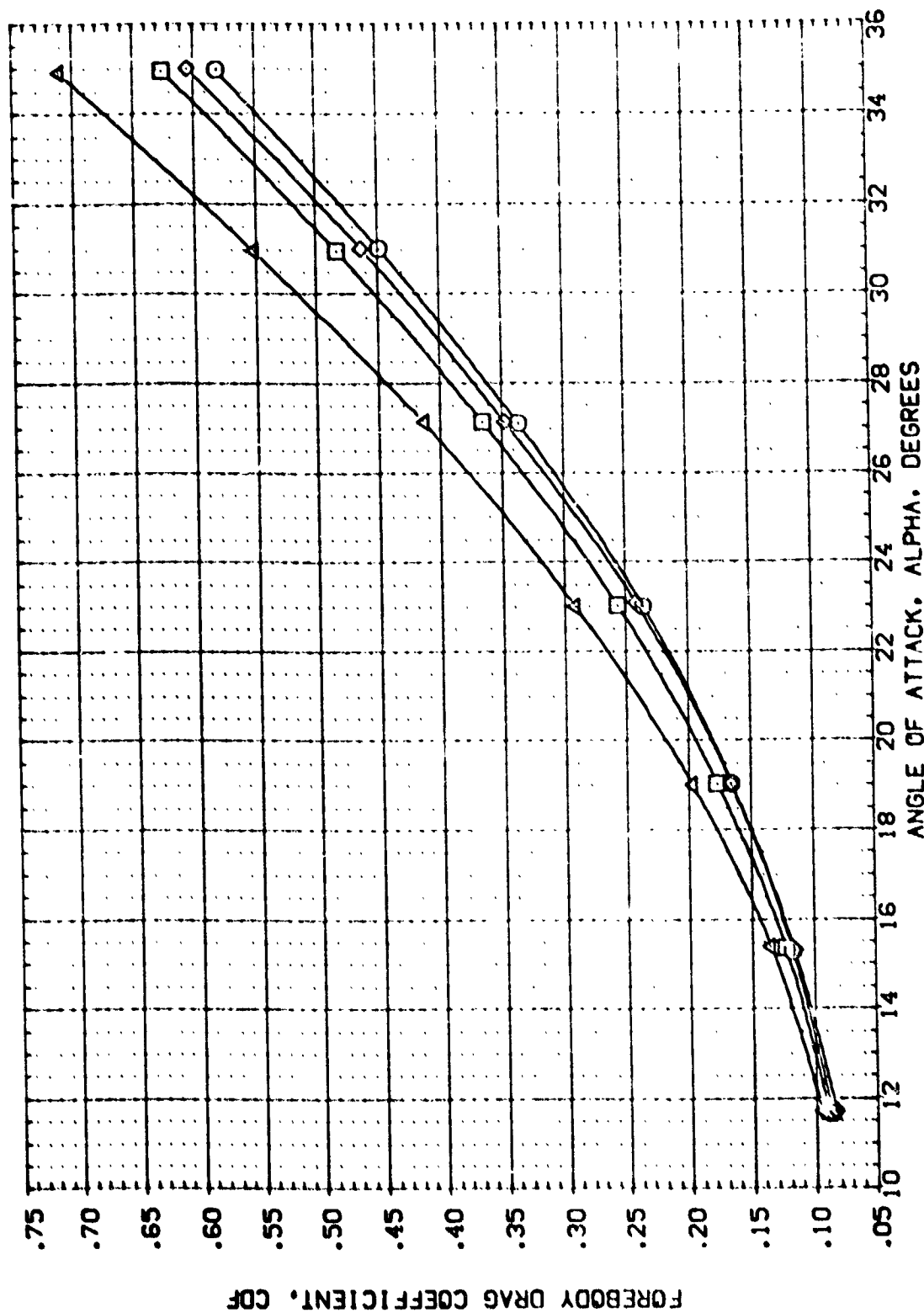


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS. RN/L=3.0

(A)MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF029)	AMES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
(BEF027)	AMES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEF026)	AMES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	BREF 936.6800 IN.
(BEF028)	AMES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	XTRP 1076.4800 IN.
						YTRP .0000 IN.
						ZTRP 375.0000 IN.
						SCALE .0150

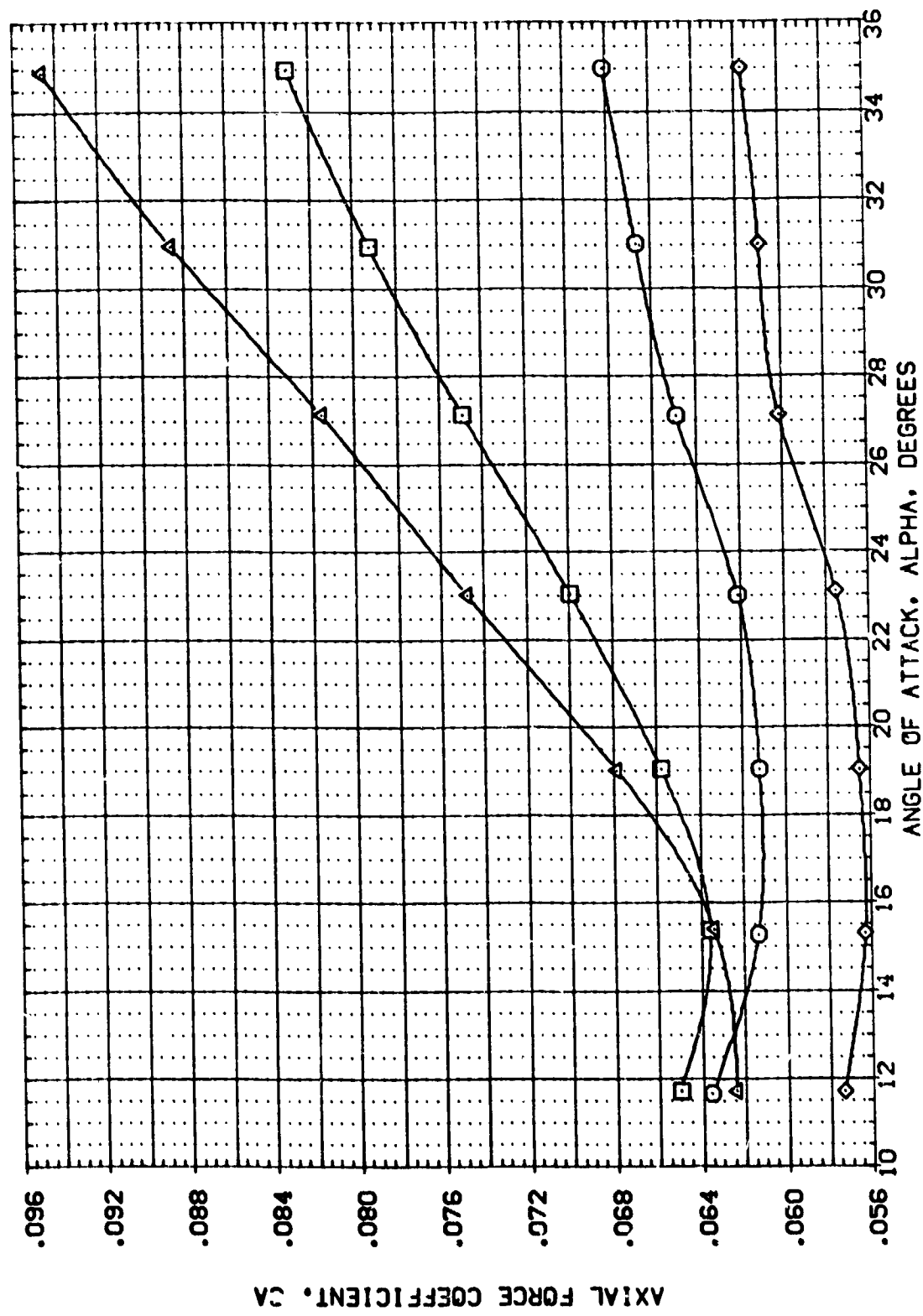


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFC29)	AVES 3.5-176 CAB7 140 A/B CRB/ITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
(BEFC27)	AVES 3.5-176 CAB7 140 A/B CRB/ITER	-40.000	55.000	16.300	3.000	LREF 1230.3000 N.
(BEFC26)	AVES 3.5-176 CAB7 140 A/B CRB/ITER	10.000	55.000	16.300	3.000	BREF 936.6800 N.
(BEFC28)	AVES 3.5-176 CAB7 140 A/B CRB/ITER	10.000	55.000	16.300	3.000	YREF 1076.4800 N.
						ZREF 375.0500 N.
						SCALE .0150

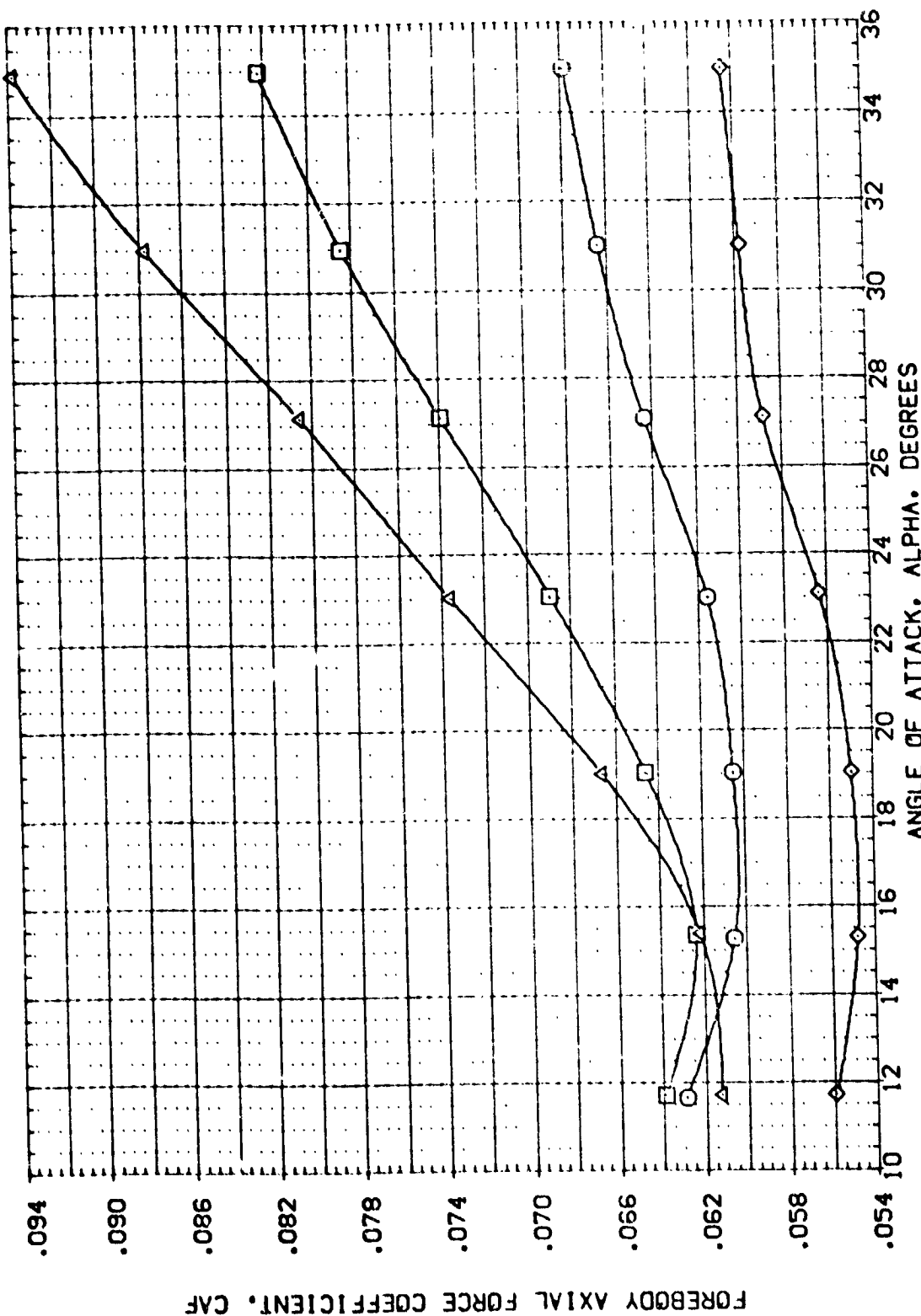


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 10.27

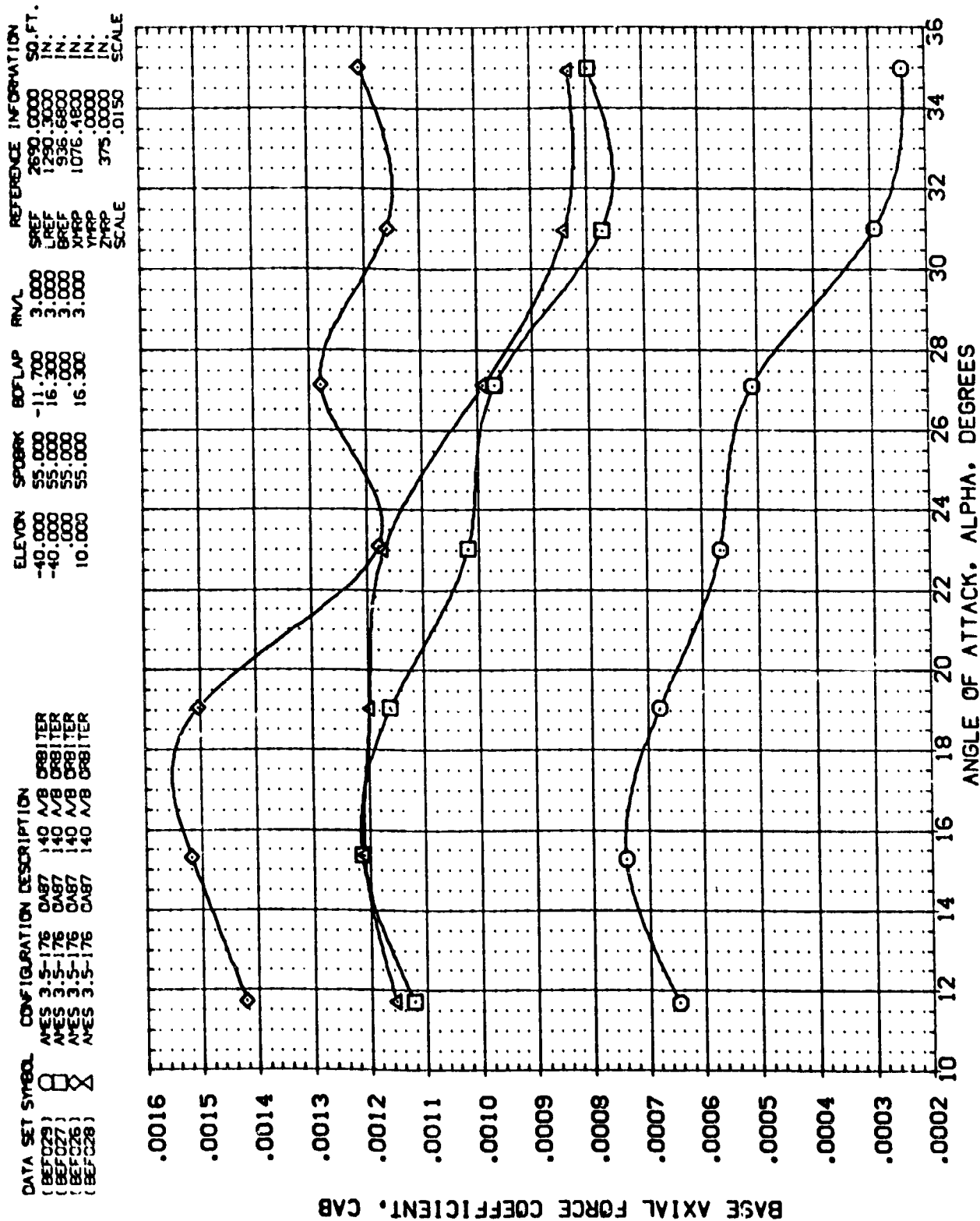


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, $RN/L=3.0$
(A)MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SHOCK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF029)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
(BEF027)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEF026)	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	BREF 936.6800 IN.
(BEF028)	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	XMRP 1076.4800 IN.
						YMRP 375.0000 IN.
						SCALE .0150 SCALE

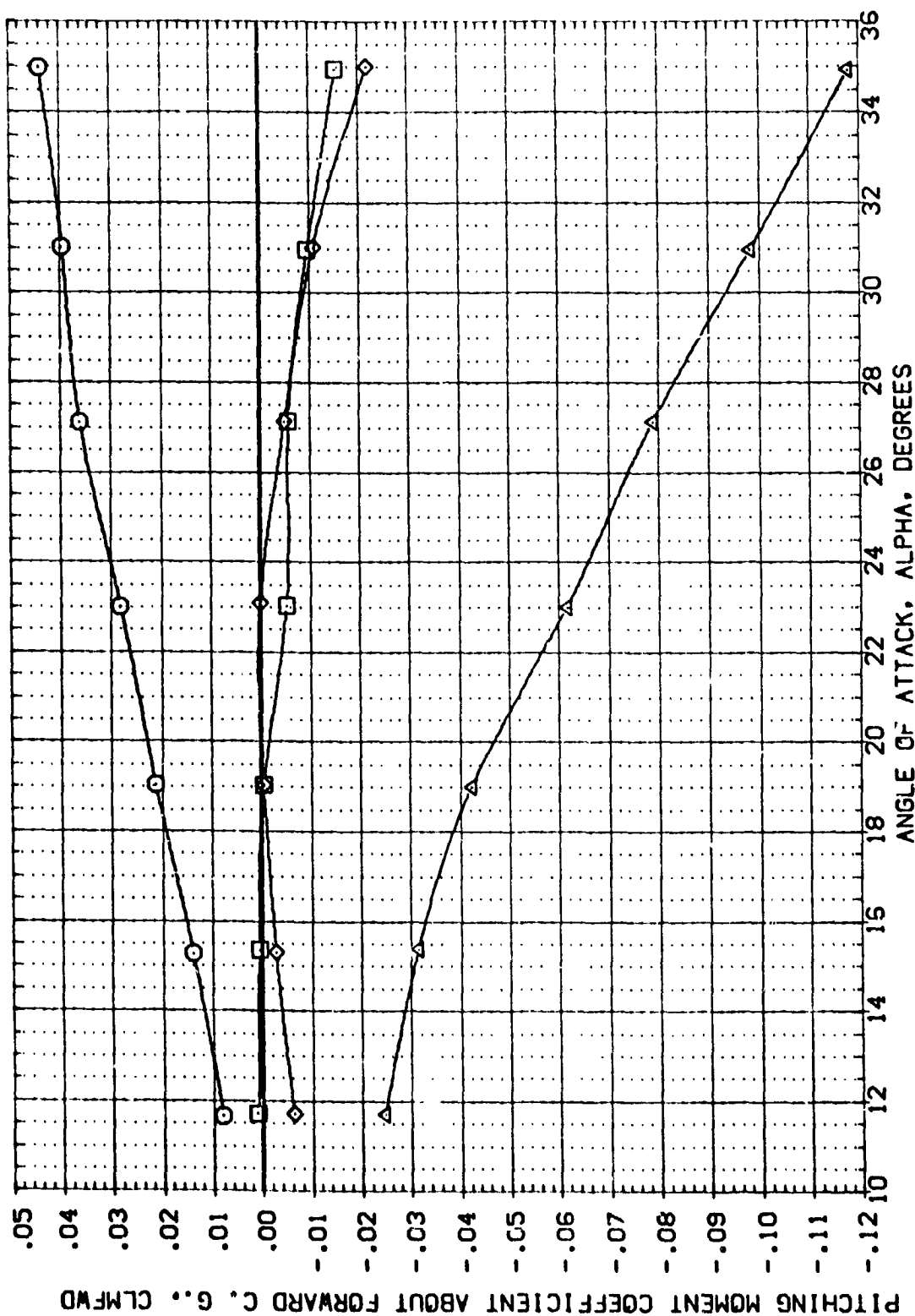


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOILER	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF029)	AVES 3.5-176 DAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SO.FT.
(BEF027)	AVES 3.5-176 DAB7 140 A/B ORBITER	-40.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEF026)	AVES 3.5-176 DAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	BREF 936.6800 IN.
(BEF028)	AVES 3.5-176 DAB7 140 A/B ORBITER					XMRP 1076.4800 IN.
						YMRP 375.0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

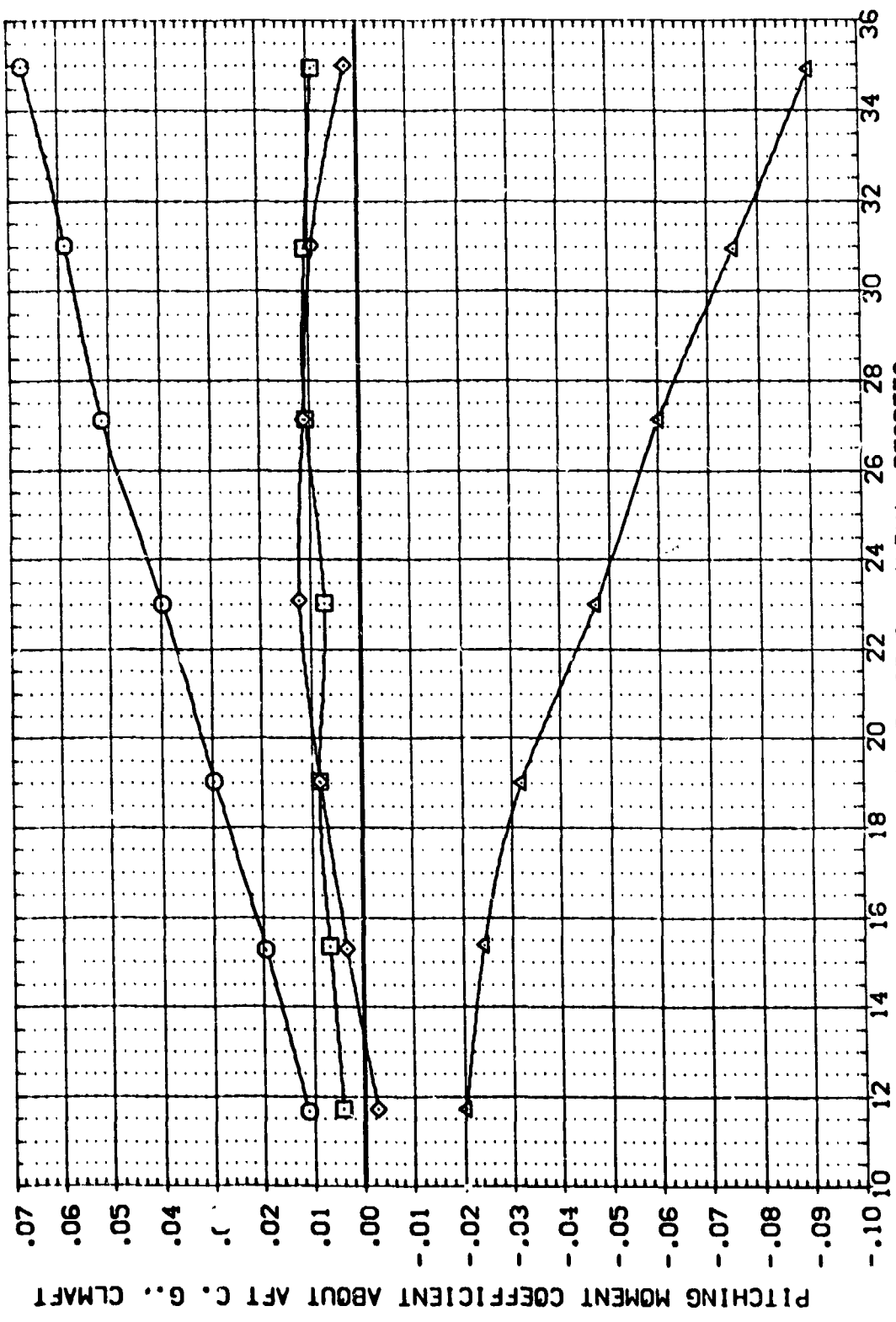


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BDYFLAP	RN/L	REFERENCE INFORMATION
(BEF029)	AVES 3.5-176 0A87 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
(BEF027)	AVES 3.5-176 0A87 140 A/B ORBITER	-40.000	55.000	16.300	3.000	LREF 1280.3000 IN.
(BEF026)	AVES 3.5-176 0A87 140 A/B ORBITER	10.000	55.000	16.300	3.000	BREF 536.6800 IN.
(BEF028)	AVES 3.5-176 0A87 140 A/B ORBITER	10.000	55.000	16.300	3.000	XMRP 1076.4800 IN.
						YMRP 375.0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

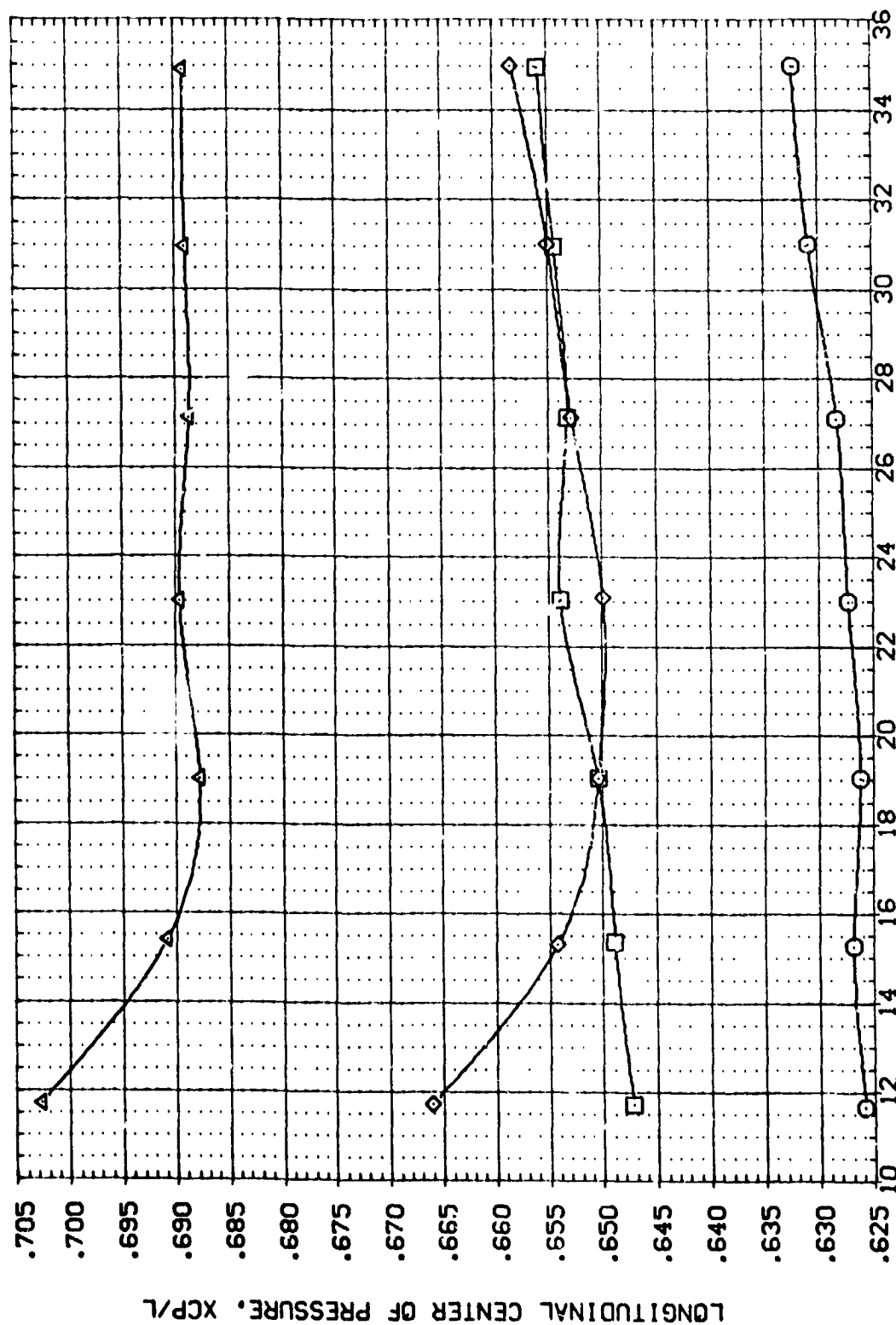


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 10.27

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF029)	□	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2650.0000 SO.FT.
(BEF027)	□	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	15.300	3.000	LREF 1750.3000 IN.
(BEF026)	□	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	BREF 936.6000 IN.
(BEF028)	□	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	XREF 1076.4000 IN.
							YREF 0.0000 IN.
							ZREF 375.0000 IN.
							SCALE 0.50

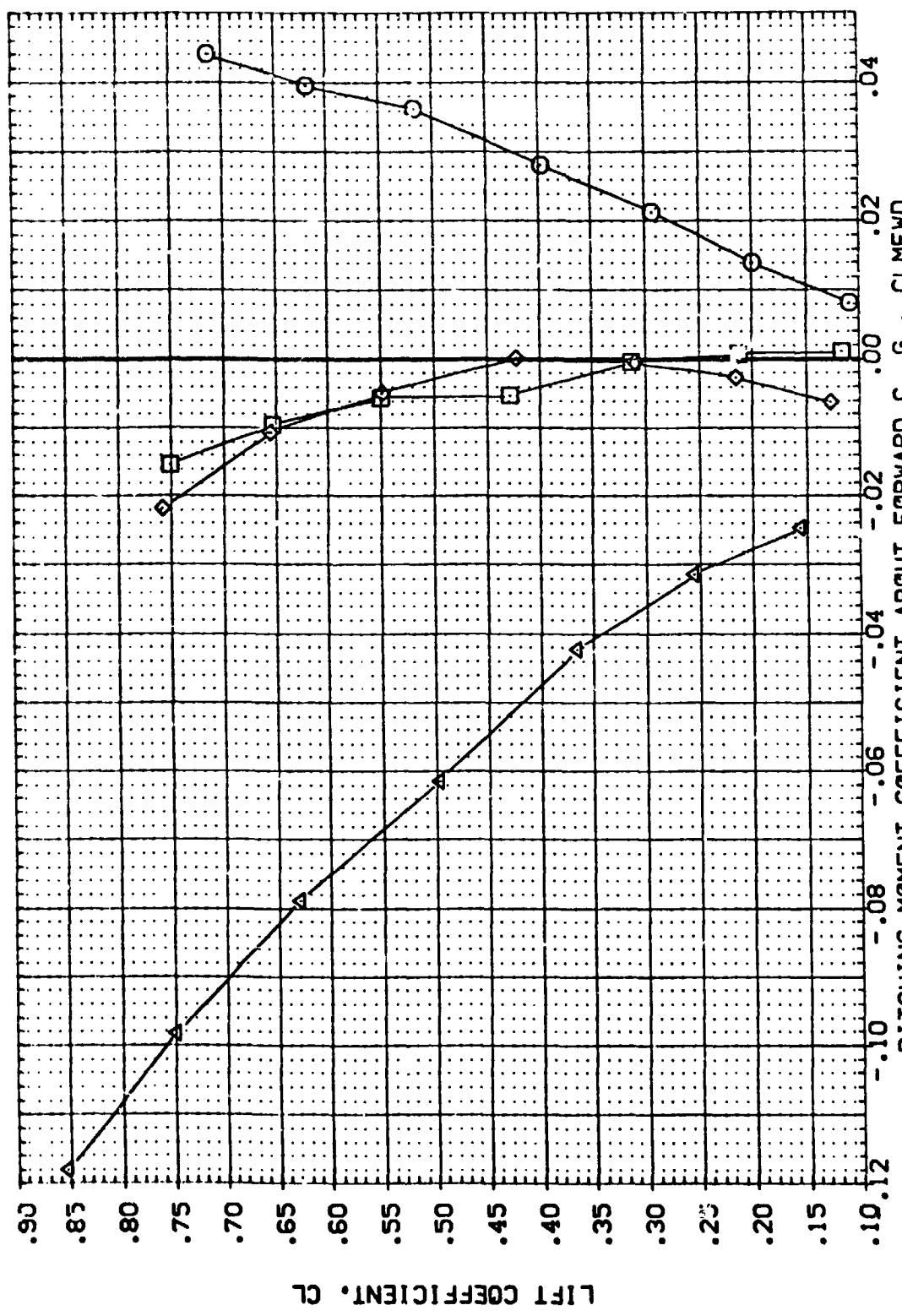


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFC29)	AVES 3.5-176 CAB/ 140 A/ 3RBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SO.FT.
(BEFC27)	AVES 3.5-176 CAB/ 140 A/ 0RBITER	-40.000	55.000	16.300	3.000	LREF 1230.3000 IN.
(BEFC26)	AVES 3.5-176 CAB/ 140 A/B/ 0RBITER	13.000	55.000	16.300	3.000	BREF 935.8800 IN.
(BEFC28)	AVES 3.5-176 CAB/ 140 A/B/ 0RBITER	13.000	55.000	16.300	3.000	YREF 1076.4800 IN.
						ZREF 375.0000 IN.
						SCALE .0150

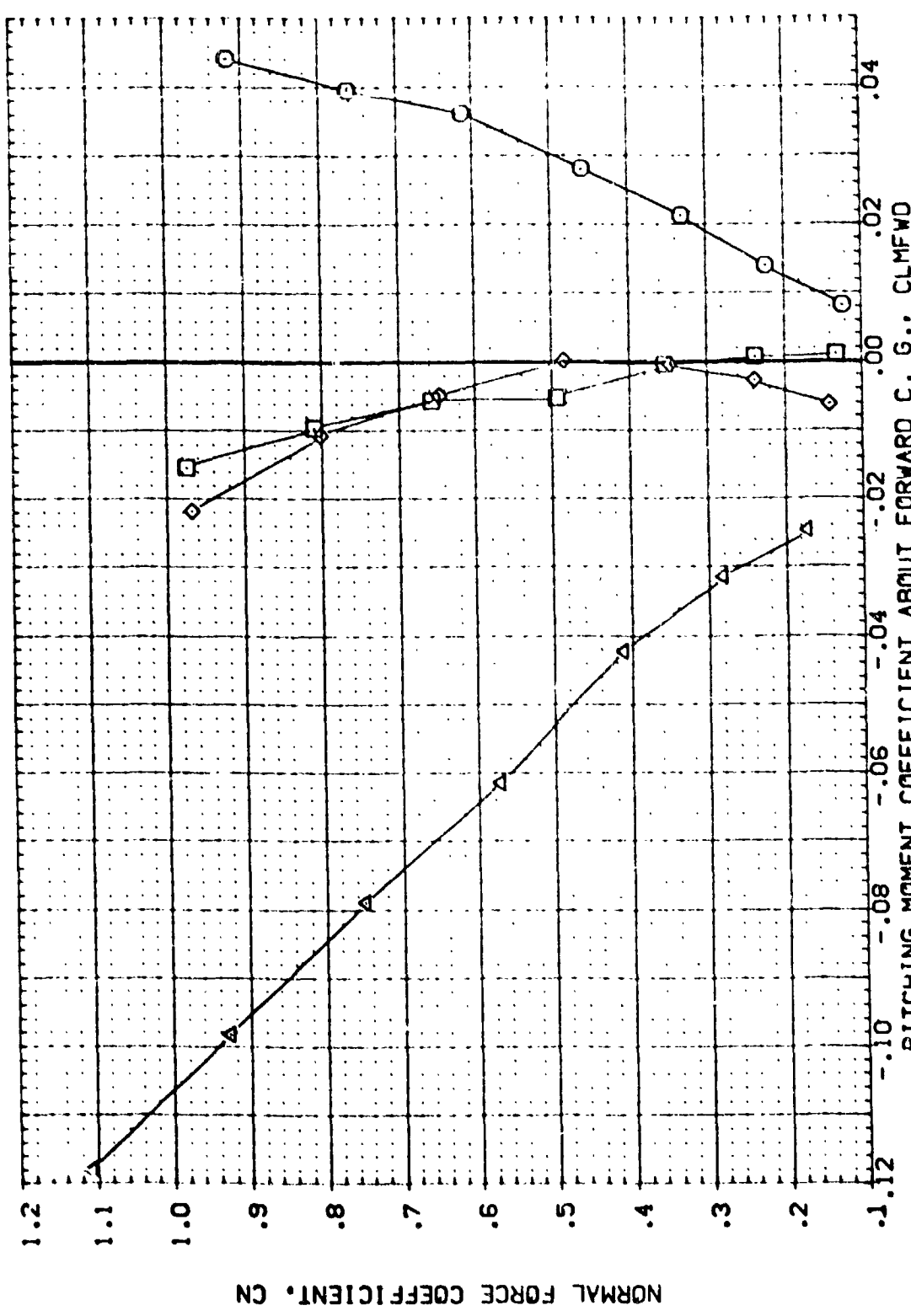


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF029)	AVES 3.5-176 CAB7 140 A/B CRB1TER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
(BEF027)	AVES 3.5-176 CAB7 140 A/B CRB1TER	-40.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEF026)	AVES 3.5-176 CAB7 140 A/B CRB1TER	10.000	55.000	16.300	3.000	BREF 936.6800 IN.
(BEF028)	AVES 3.5-176 CAB7 140 A/B CRB1TER	10.000	55.000	16.300	3.000	XMRP 1076.4800 IN.
						YMRP 375.0000 IN.
						ZMRP 0.0150 SCALE

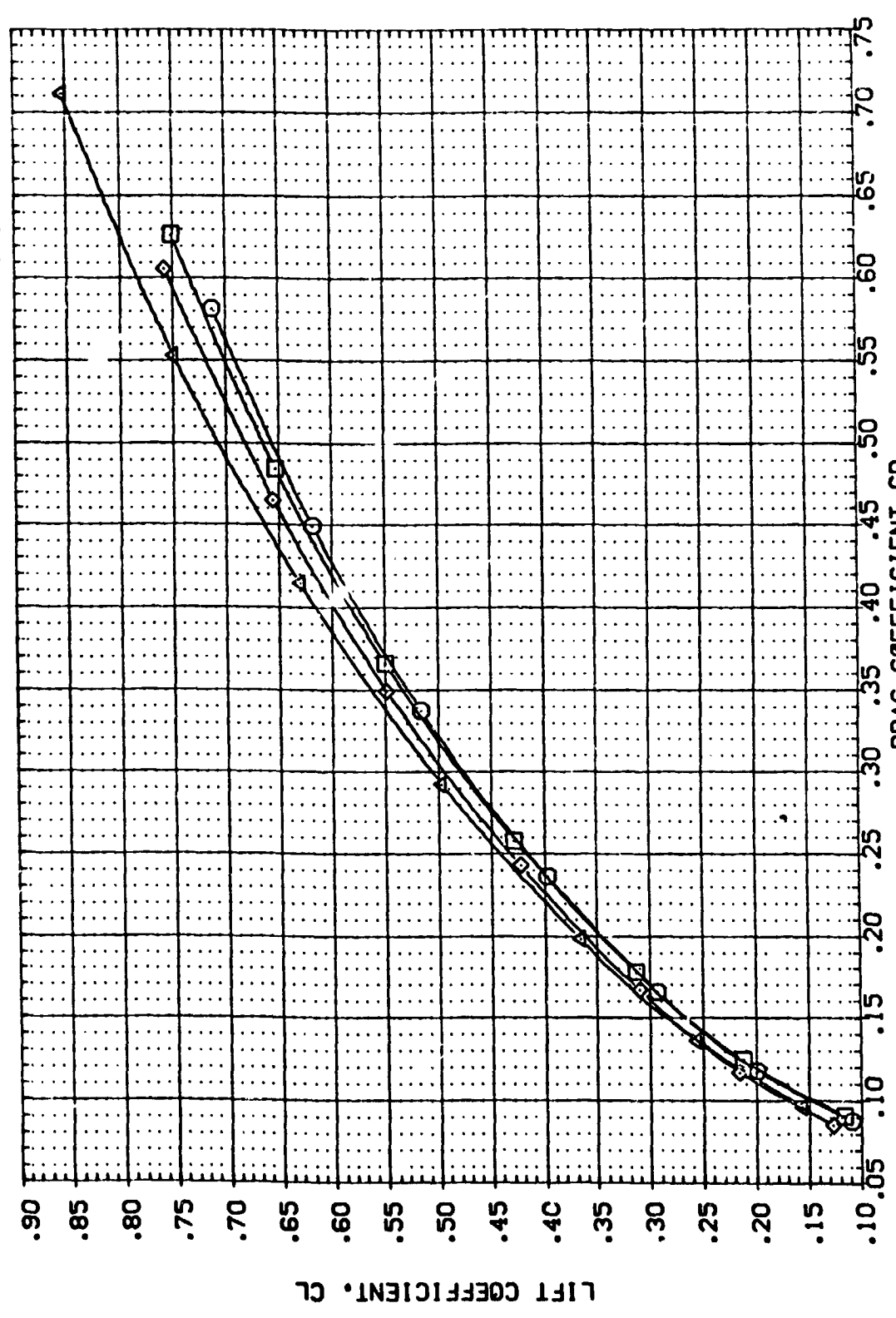


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 10.27

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(AEFC29)	□	APES 3.5-176 DAB7 140 A/B CRBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SO.FT.
(AEFC27)	○	APES 3.5-176 DAB7 140 A/B CRBITER	-40.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(AEFC26)	△	APES 3.5-176 DAB7 140 A/B CRBITER	-40.000	55.000	16.300	3.000	BREF 936.6800 IN.
(AEFC28)	◇	APES 3.5-176 DAB7 140 A/B CRBITER	10.000	55.000	16.300	3.000	XREF 1076.4800 IN.
							YREF 375.0000 IN.
							ZREF .0150 SCALE

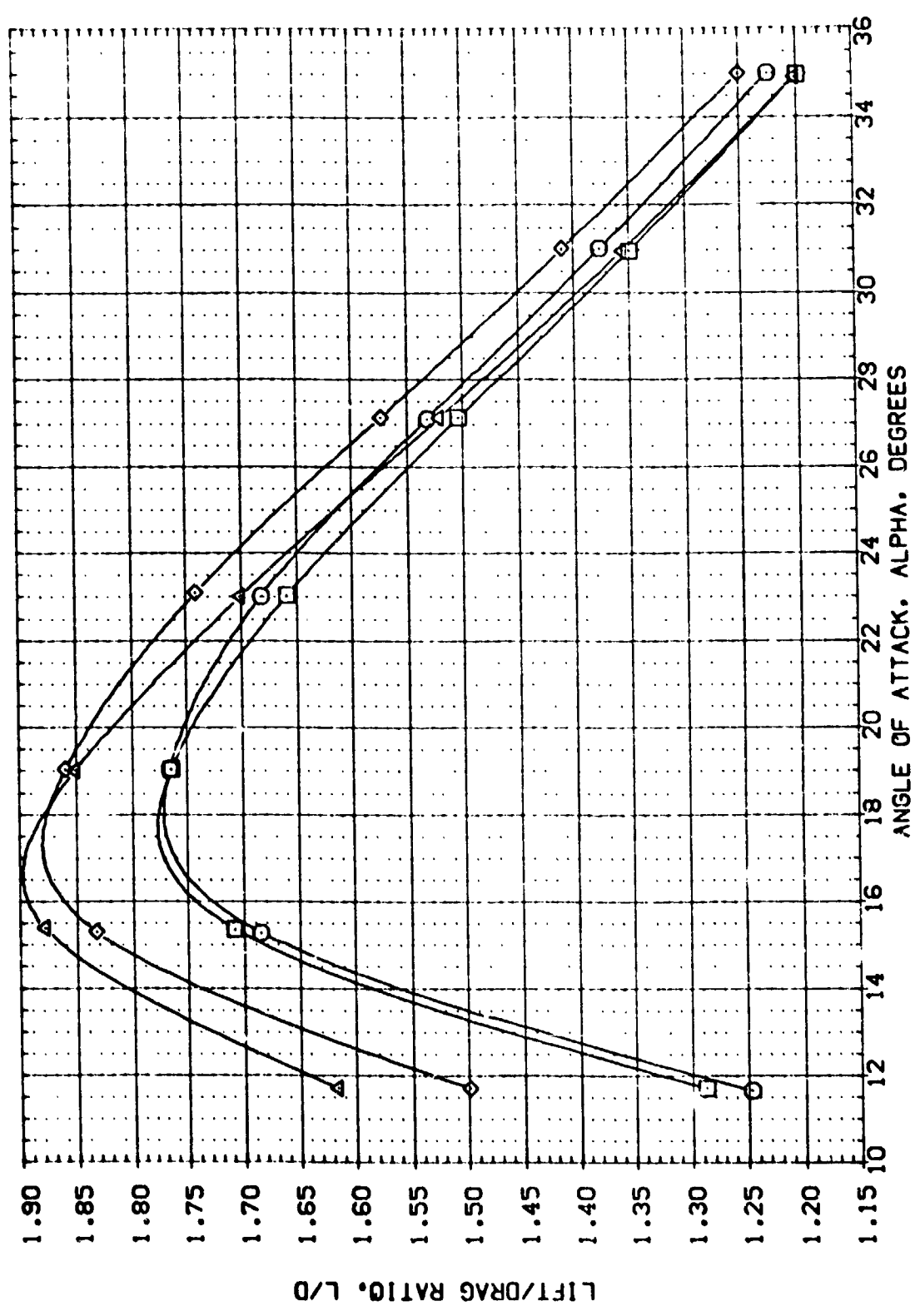


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0
(A)MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	ELEVON	RV/L	SPDRBK	REFERENCE INFORMATION
(BES016)	AVES 3.5-76 C/87 140 A/B C/87 TER	-11.700	.000	10.000	55.000	SREF 2690.0000 SO.FT.
(BES017)	AVES 3.5-76 C/87 140 A/B C/87 TER	-11.700	.000	10.000	55.000	LREF 1290.3000 IN.
(BES018)	AVES 3.5-76 C/87 140 A/B C/87 TER	-11.700	.000	10.000	55.000	BREF 936.6800 IN.
(BES019)	AVES 3.5-76 C/87 140 A/B C/87 TER	-11.700	.000	3.000	55.000	XREF 1076.4800 IN.
(BES020)	AVES 3.5-76 C/87 140 A/B C/87 TER	-11.700	.000	3.000	55.000	YREF 0000 IN.
(BES021)	AVES 3.5-76 C/87 140 A/B C/87 TER	-11.700	.000	3.000	55.000	ZREF 375.0000 IN.
(BES022)	AVES 3.5-76 C/87 140 A/B C/87 TER	-11.700	.000	3.000	55.000	SCALE .0150

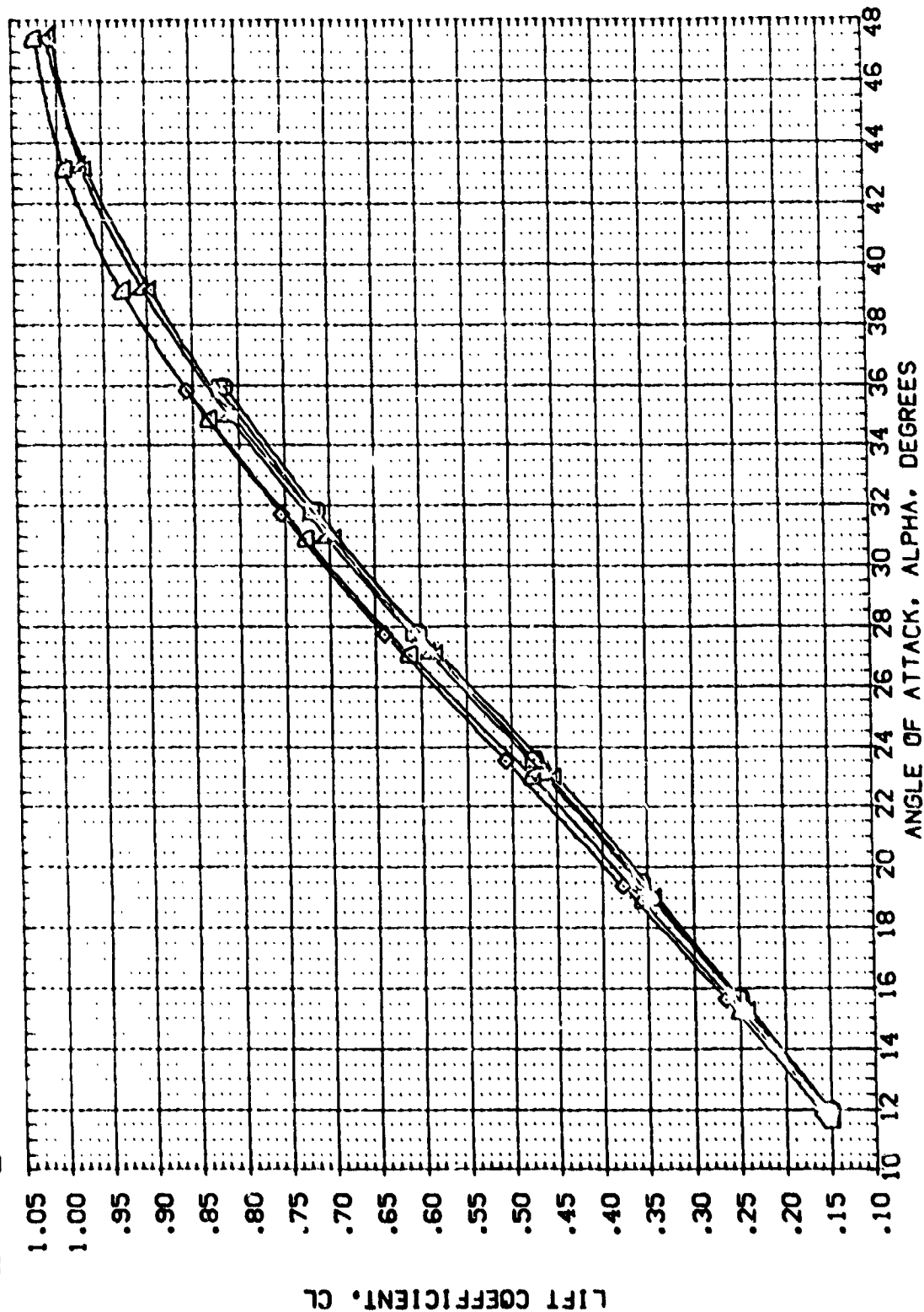
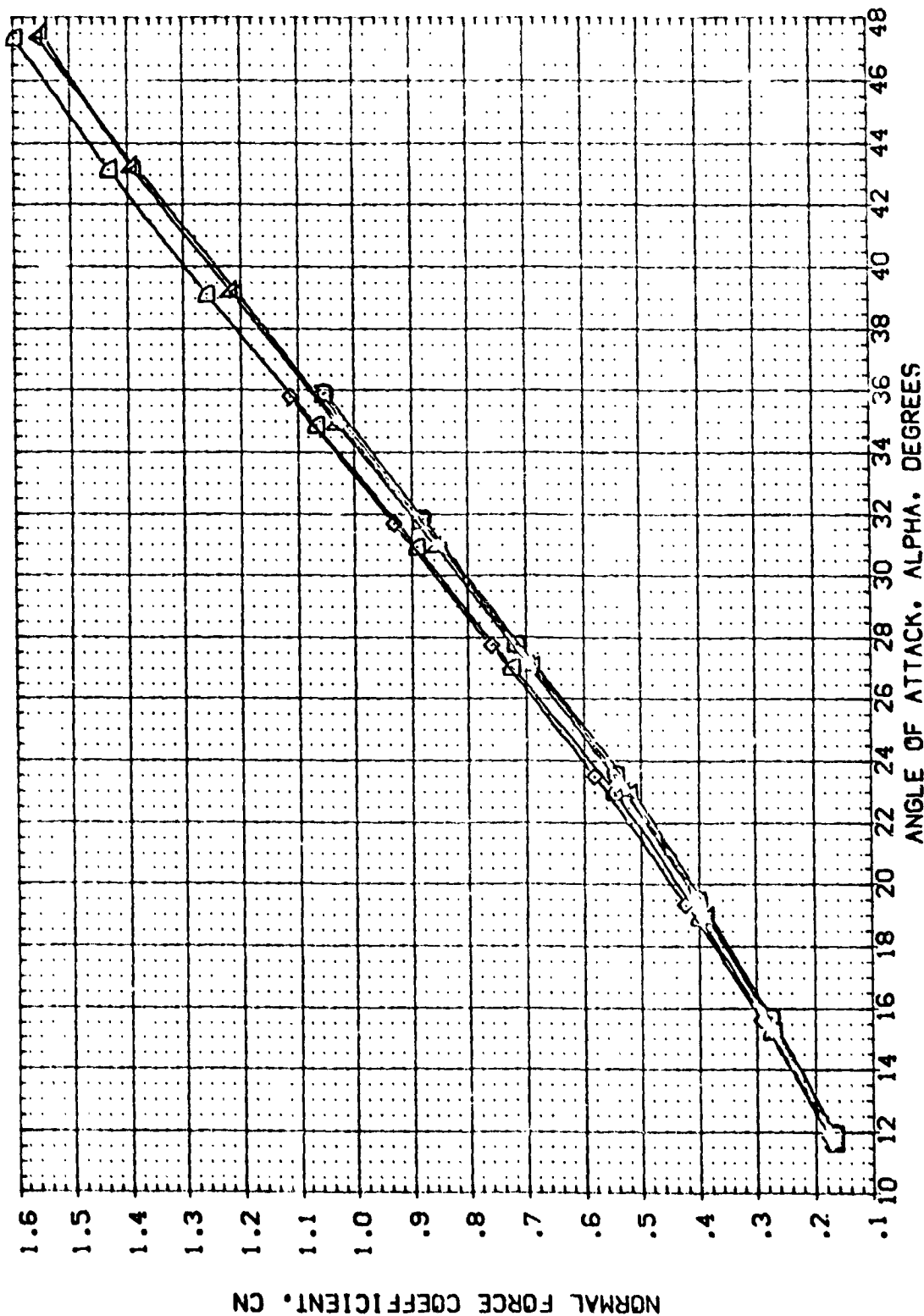


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET	SYMBOL	CONFIGURATION	DESCRIPTION	BOFLAP	ELEVON	%AL	SPDRBK	REFERENCE INFORMATION
(BEFC16)	□	AVES 3.5-176	CA87 140 A/B CR81TER	-11.700	.000	10.000	55.000	SREF 2690.0000 SO.FT.
(BEFC01)	□	AVES 3.5-176	CA87 140 A/B CR81TER	16.300	.000	10.000	55.000	LREF 1290.3000 IN.
(BEFC015)	□	AVES 3.5-176	CA87 140 A/B CR81TER	-11.700	.000	3.000	55.000	YMRP 1076.4800 IN.
(BEFC023)	□	AVES 3.5-176	CA87 140 A/B CR81TER	.000	.000	3.000	55.000	ZMRP .0000 IN.
(BEFC027)	□	AVES 3.5-176	CA87 140 A/B CR81TER	16.300	.000	3.000	55.000	ZMRP 375.0000 IN.
(BEFC10)	□	AVES 3.5-176	CA87 140 A/B CR81TER					SCALE .0150



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BODYFLAP	ELEVON	RMVL	SPDGRK	REFERENCE INFORMATION
(SEF016)	AVES 3.5-176 CAB7 140 A/B DB31TER	-11.700	.000	10.000	55.000	SREF 2630.0000 SO.FT.
(BEF001)	AVES 3.5-176 CAB7 140 A/B DB31TER	16.307	.000	10.000	55.000	LREF 1790.3000 IN.
(BEF015)	AVES 3.5-176 CAB7 140 A/B DB31TER	-11.700	.000	10.000	55.000	BREF 536.6800 IN.
(BEF008)	AVES 3.5-176 CAB7 140 A/B DB31TER	16.307	.000	3.000	55.000	YREF 1076.4800 IN.
(BEF007)	AVES 3.5-176 CAB7 140 A/B DB31TER	-11.700	.000	3.000	55.000	ZREF 375.0000 IN.
(BEF010)	AVES 3.5-176 CAB7 140 A/B DB31TER	16.307	.000	3.000	55.000	Z-REF 375.0000 IN.
						SCALE .0150

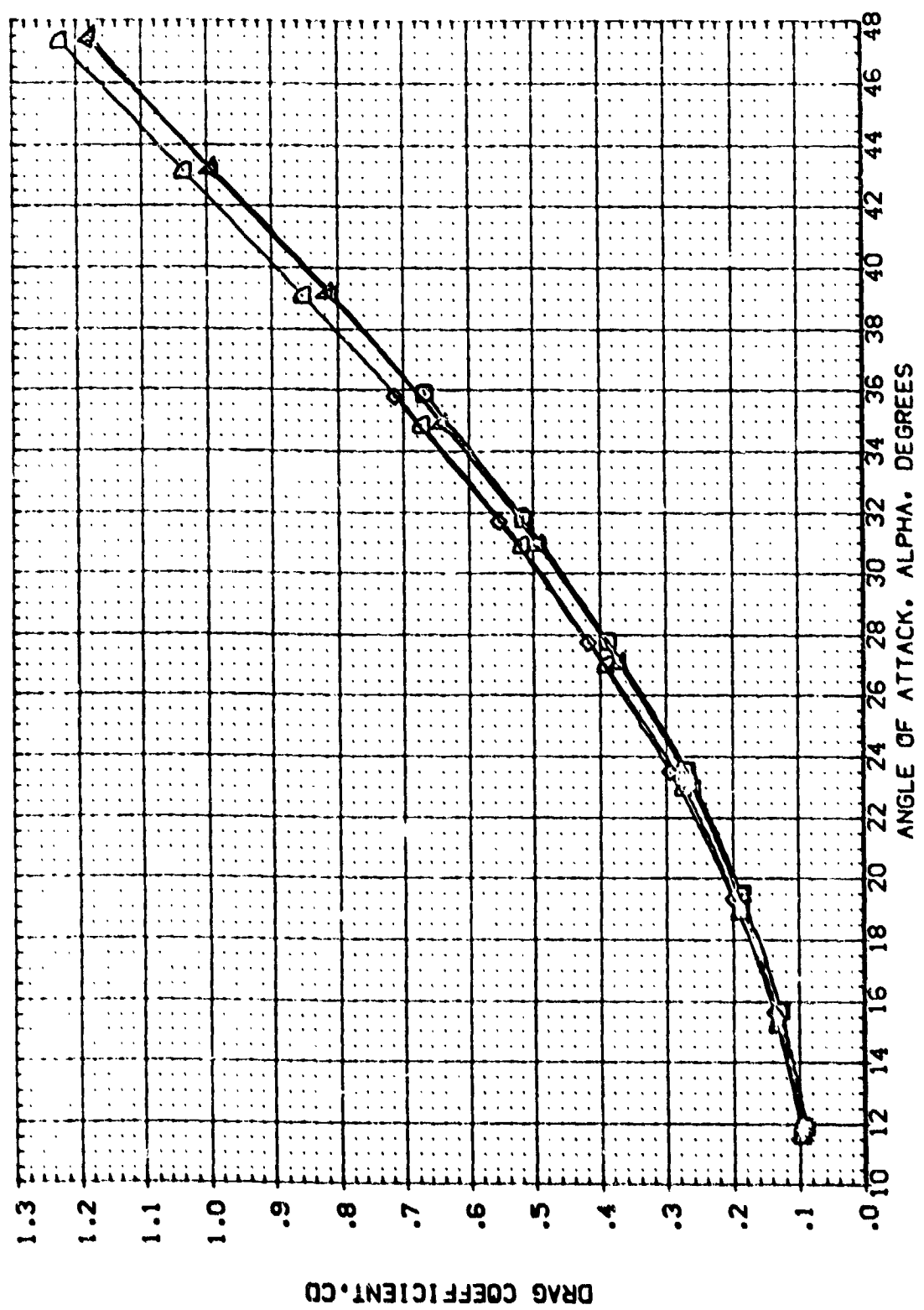


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	ELEVON	RNAL	SP/GRK	REFERENCE INFORMATION
(BEF016)	AVES 3.5-176 CAB7 14C A/B DBB1TER	-11.700	.000	10.000	55.000	SREF 2690.0000 SQ.FT.
(BEF001)	AVES 3.5-176 CAB7 14C A/B DBB1TER	.000	.000	10.000	55.000	UREF 1290.3000 IN.
(BEF015)	AVES 3.5-176 CAB7 14C A/B DBB1TER	16.300	.000	10.000	55.000	BREF 936.6800 IN.
(BEF008)	AVES 3.5-176 CAB7 14C A/B DBB1TER	-11.700	.000	3.000	55.000	YREF 1076.4800 IN.
(BEF007)	AVES 3.5-176 CAB7 14C A/B DBB1TER	.000	.000	3.000	55.000	ZREF 375.0000 IN.
(BEF010)	AVES 3.5-176 CAB7 14C A/B DBB1TER	16.300	.000	3.000	55.000	SCALE .0150

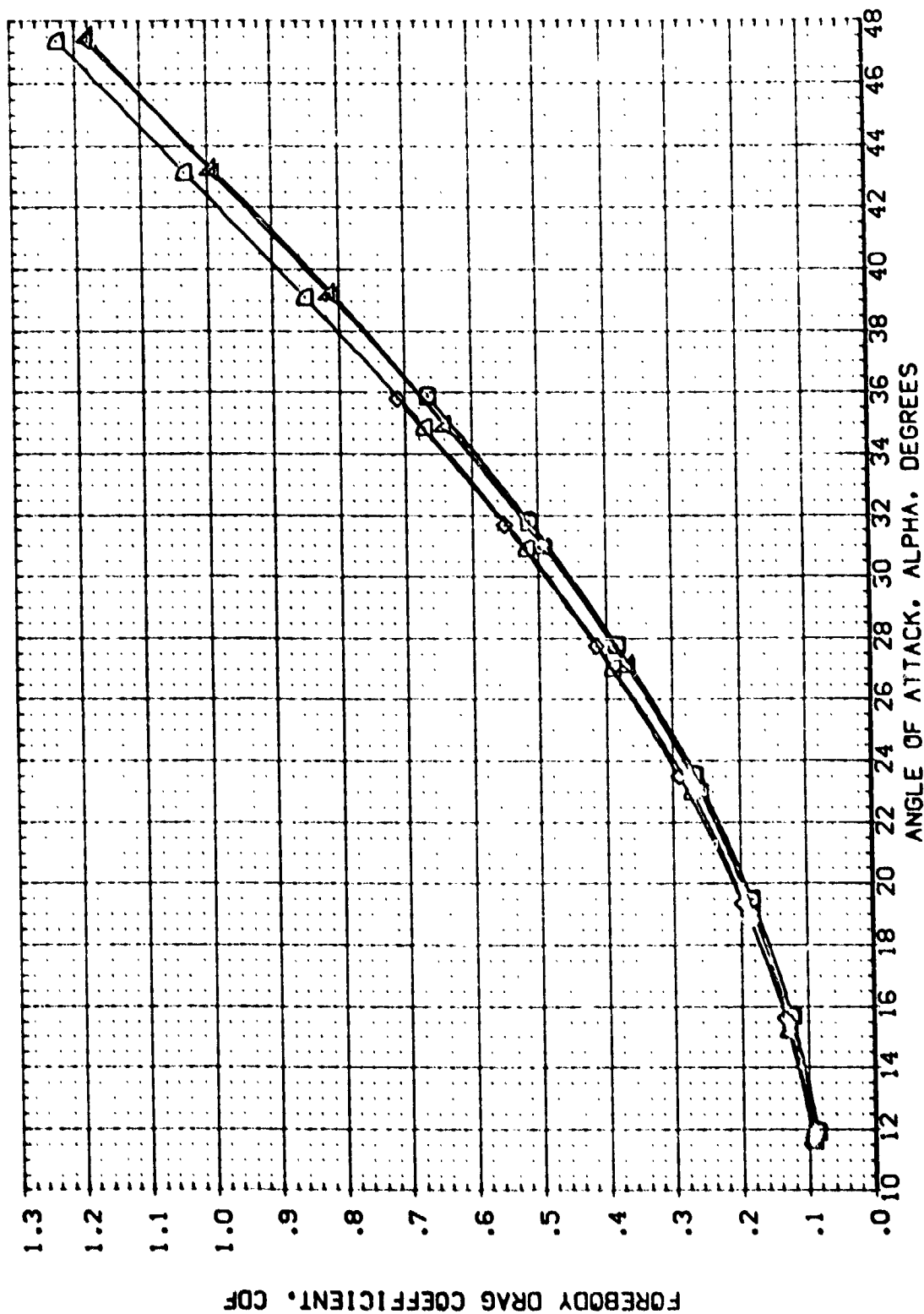


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

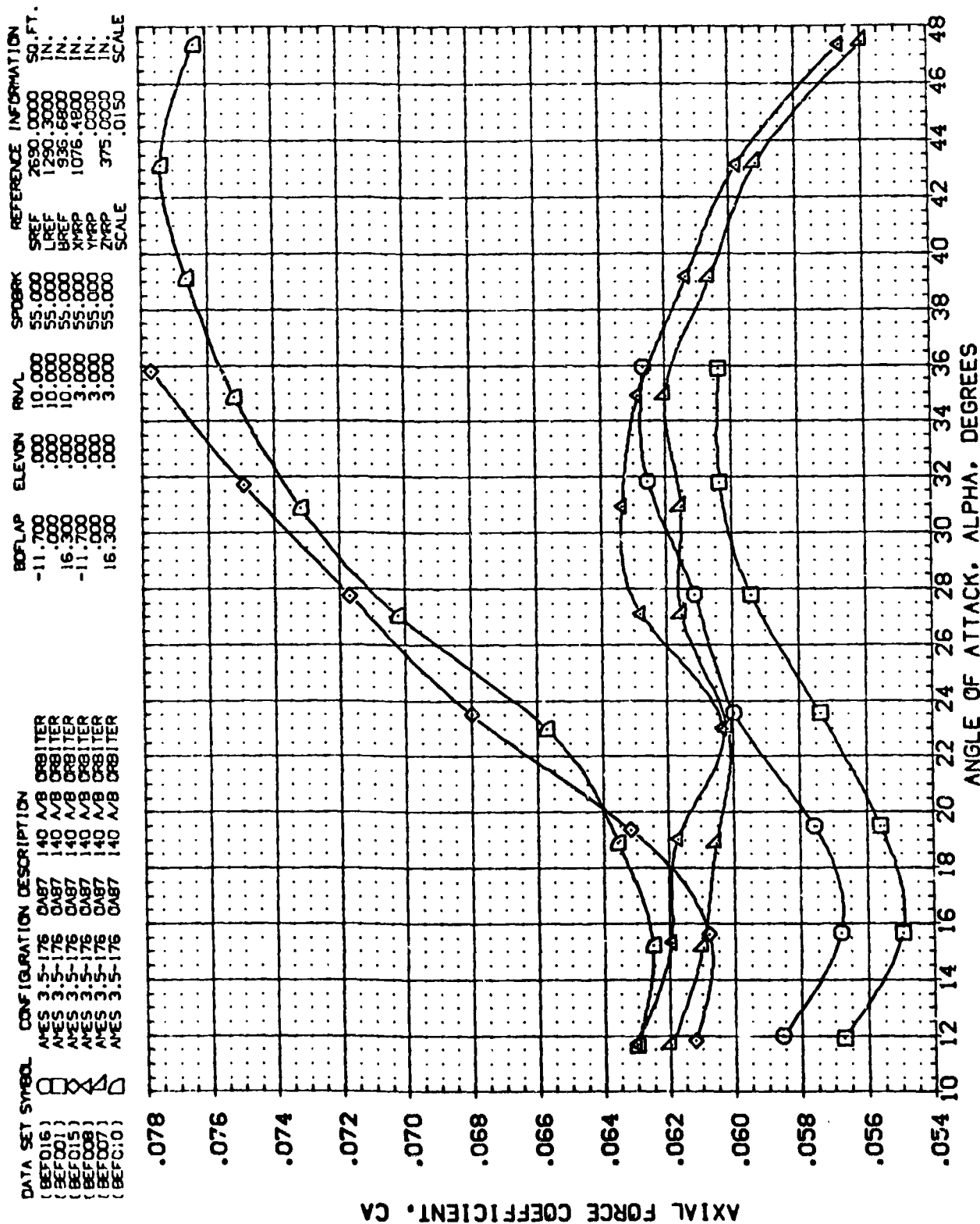


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	ELEVON	RAVL	SPDRBK	REFERENCE INFORMATION
(BEF016)	AMES 3-5-176 DA87 140 A/B ORBITER	-11.700	.000	10.000	55.000	SREF 2630.0000 SQ.FT.
(BEF017)	AMES 3-5-176 DA87 140 A/B ORBITER	.000	.000	10.000	55.000	LREF 1250.3000 IN.
(BEF018)	AMES 3-5-176 DA87 140 A/B ORBITER	-16.300	.000	10.000	55.000	BREF 936.6800 IN.
(BEF019)	AMES 3-5-176 DA87 140 A/B ORBITER	-11.700	.000	3.000	55.000	XMRP 1076.4800 IN.
(BEF020)	AMES 3-5-176 DA87 140 A/B ORBITER	.000	.000	3.000	55.000	YMRP .0000 IN.
(BEF021)	AMES 3-5-176 DA87 140 A/B ORBITER	16.300	.000	3.000	55.000	ZMRP .0000 IN.
(BEF022)	AMES 3-5-176 DA87 140 A/B ORBITER					SCALE .0150

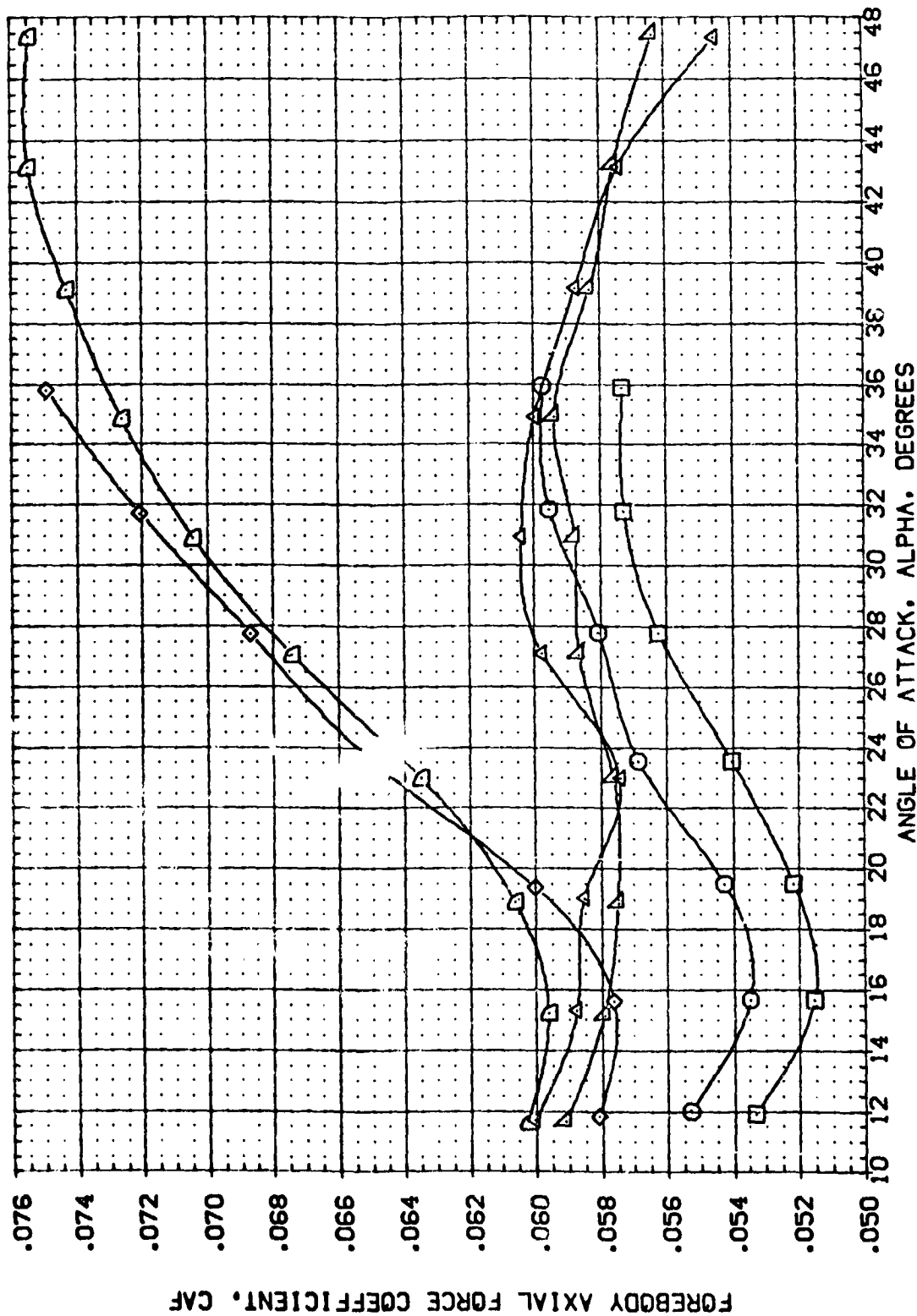


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

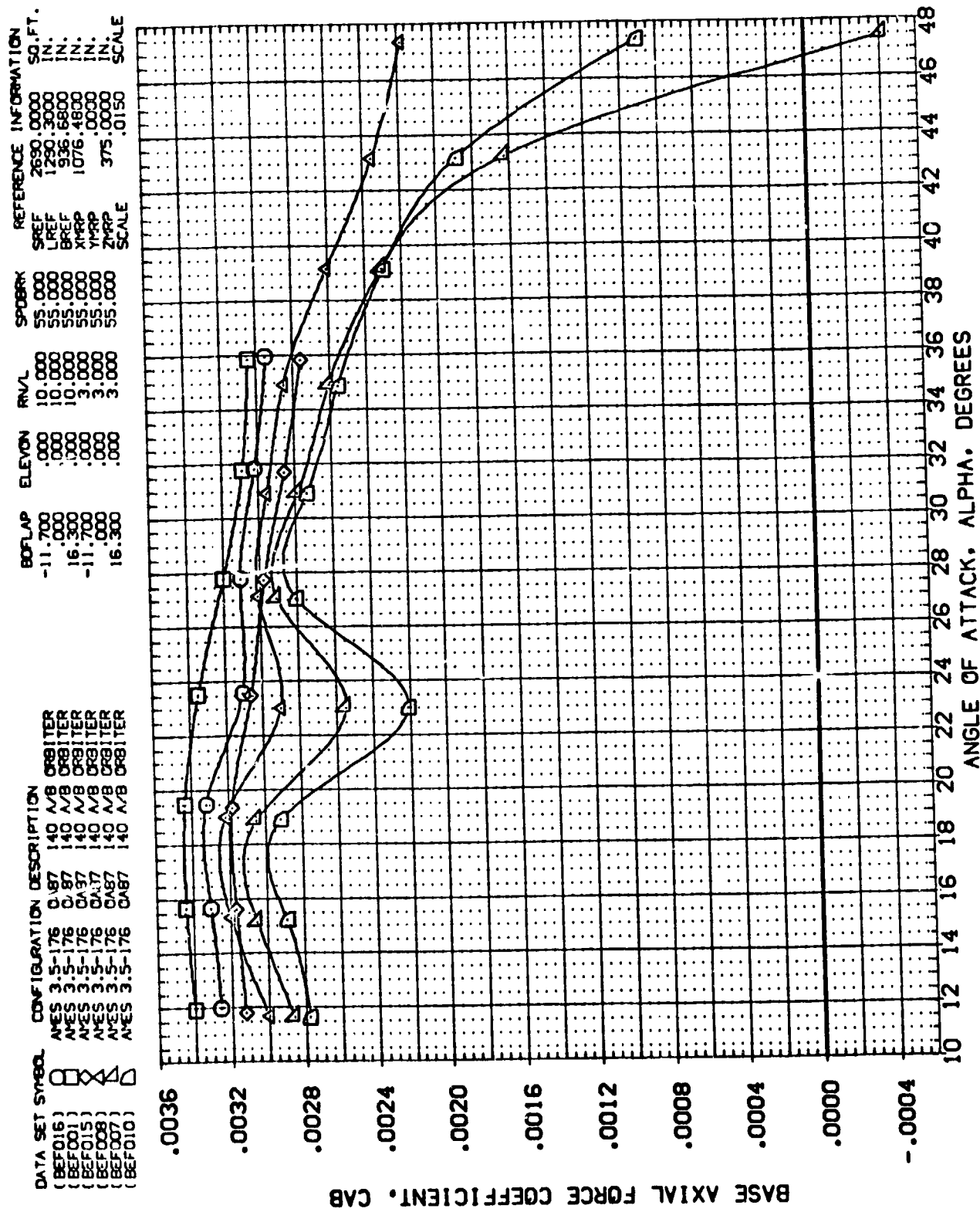


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	ELEVON	R/V/L	SPOBRK	REFERENCE INFORMATION
(BEFO16)	AVES 3.5-176 DAB7 140 A/B CRBITER	-11.700	.000	10.000	55.000	SREF 2650.0000 SQ.FT.
(BEFO01)	AVES 3.5-176 DAB7 140 A/B CRBITER	.000	.000	10.000	55.000	LREF 1290.3000 IN.
(BEFO15)	AVES 3.5-176 DAB7 140 A/B CRBITER	.000	.000	10.000	55.000	BREF 936.6800 IN.
(BEFC08)	AVES 3.5-176 DAB7 140 A/B CRBITER	-16.300	.000	3.000	55.000	XMRP 1076.4800 IN.
(BEFO07)	AVES 3.5-176 DAB7 140 A/B CRBITER	-11.700	.000	3.000	55.000	YMRP 375.0000 IN.
(BEFO10)	AVES 3.5-176 DAB7 140 A/B CRBITER	16.300	.000	3.000	55.000	ZMRP .0150 SCALE

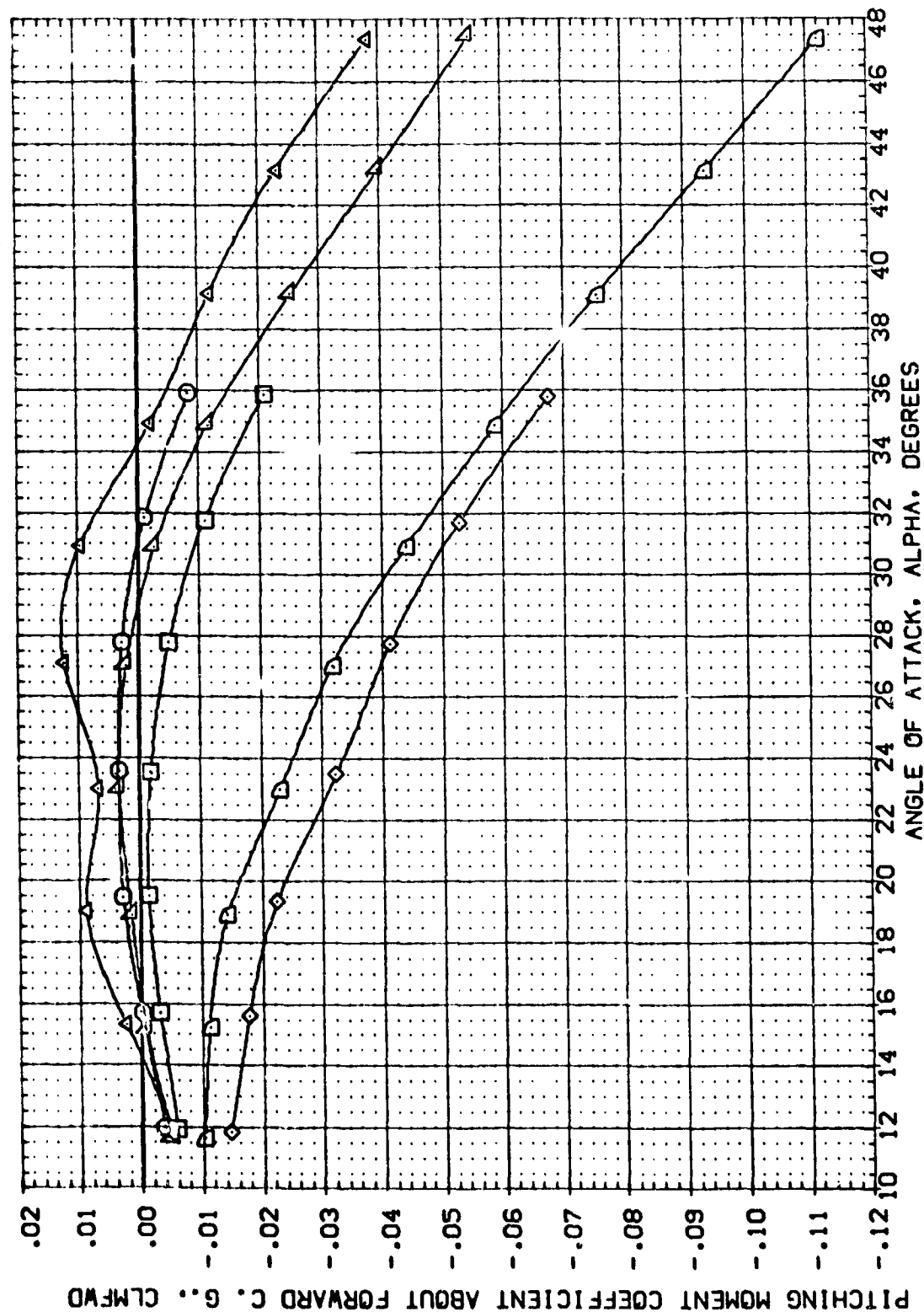


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	ELEVON	RN/L	SPDBRK	REFERENCE INFORMATION
(BEF016)	AVES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	10.000	55.000	SREF 2690.0000 SQ.FT.
(BEF001)	AVES 3.5-176 CAB7 140 A/B CRB1TER	.000	.000	10.000	55.000	LREF 1250.3000 IN.
(BEF015)	AVES 3.5-176 CAB7 140 A/B CRB1TER	16.300	.000	10.000	55.000	BREF 932.6872 IN.
(BEF008)	AVES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	3.000	55.000	XMRP 1076.4800 IN.
(BEF007)	AVES 3.5-176 CAB7 140 A/B CRB1TER	.000	.000	3.000	55.000	YMRP .0000 IN.
(BEF010)	AVES 3.5-176 CAB7 140 A/B CRB1TER	16.300	.000	3.000	55.000	ZMRP .0150 IN.
					SCALE	SCALE

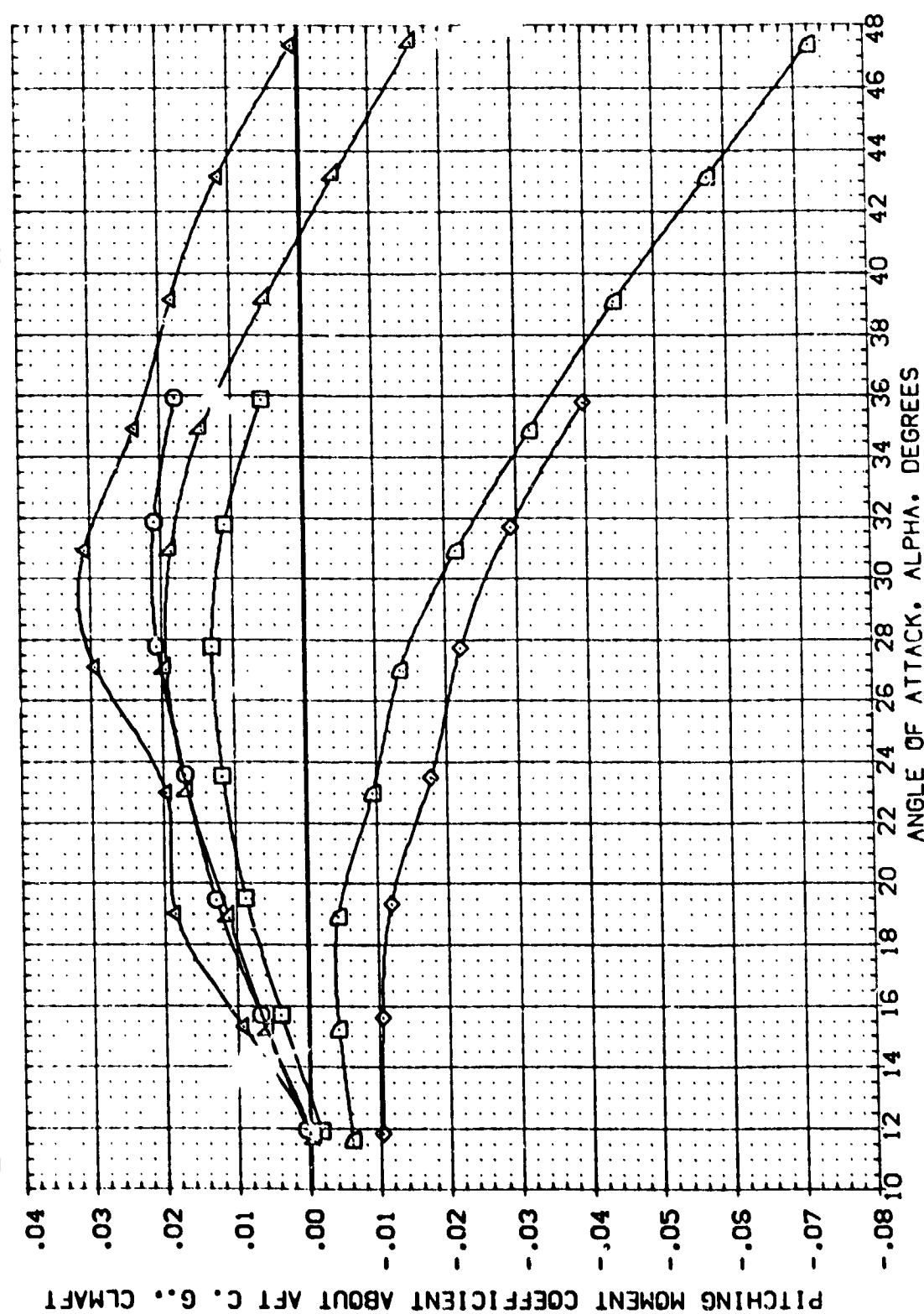


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	ELEV. IN	MACH	SPDRBK	REFERENCE INFORMATION
(BEF016)	AMES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	10.000	55.000	SREF 2690.0000 SQ.FT.
(BEF017)	AMES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	10.000	55.000	LREF 1290.3000 IN.
(BEF018)	AMES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	10.000	55.000	BREF 936.6800 IN.
(BEF019)	AMES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	10.000	55.000	XPRP 1076.4800 IN.
(BEF020)	AMES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	10.000	55.000	YPRP 375.0000 IN.
(BEF021)	AMES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	10.000	55.000	ZPRP 375.0000 IN.
(BEF022)	AMES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	10.000	55.000	SCALE .0150

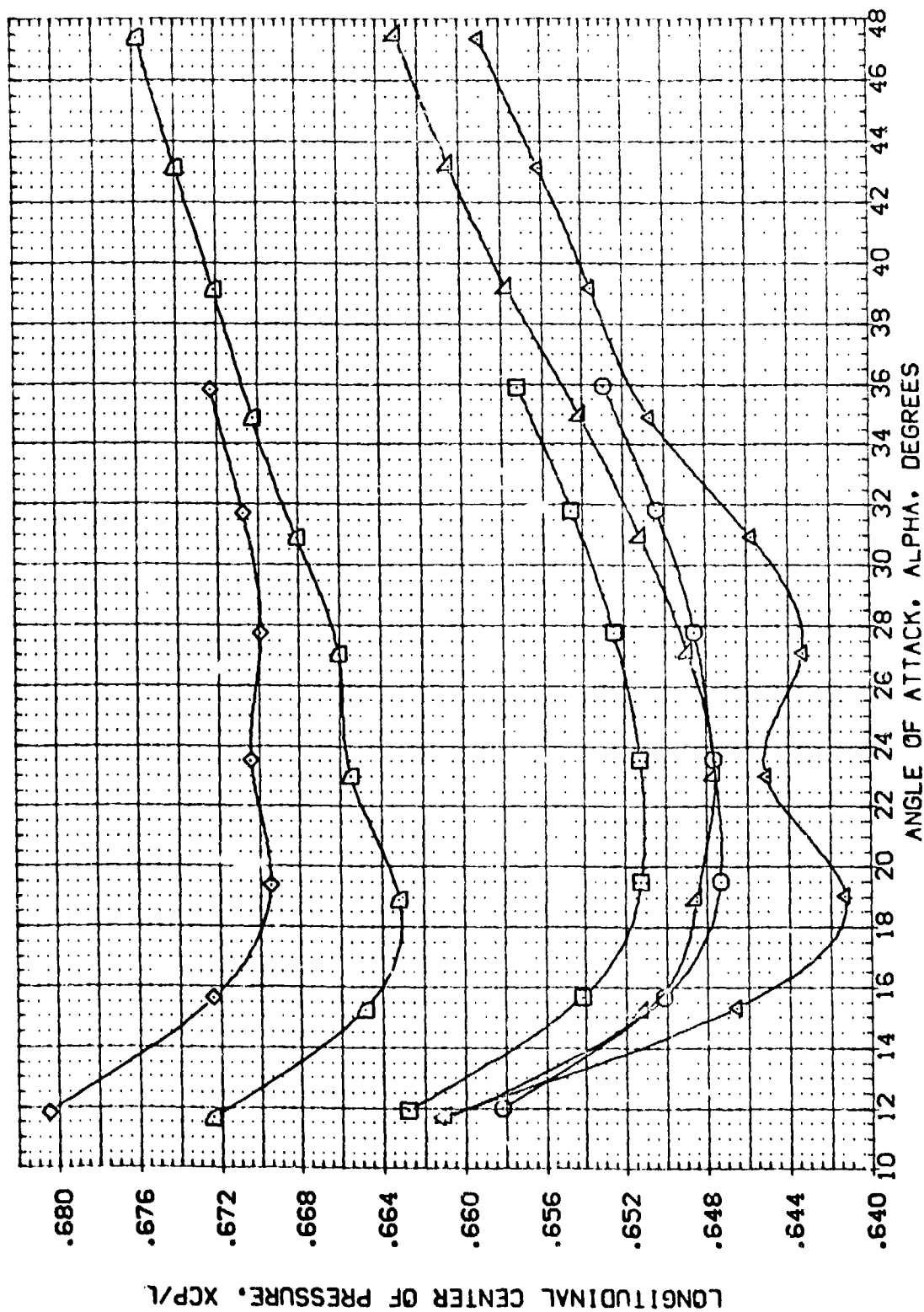


FIG. 11 BODYFLAP EFFECTIVENESS

(A) MACH = 7.32

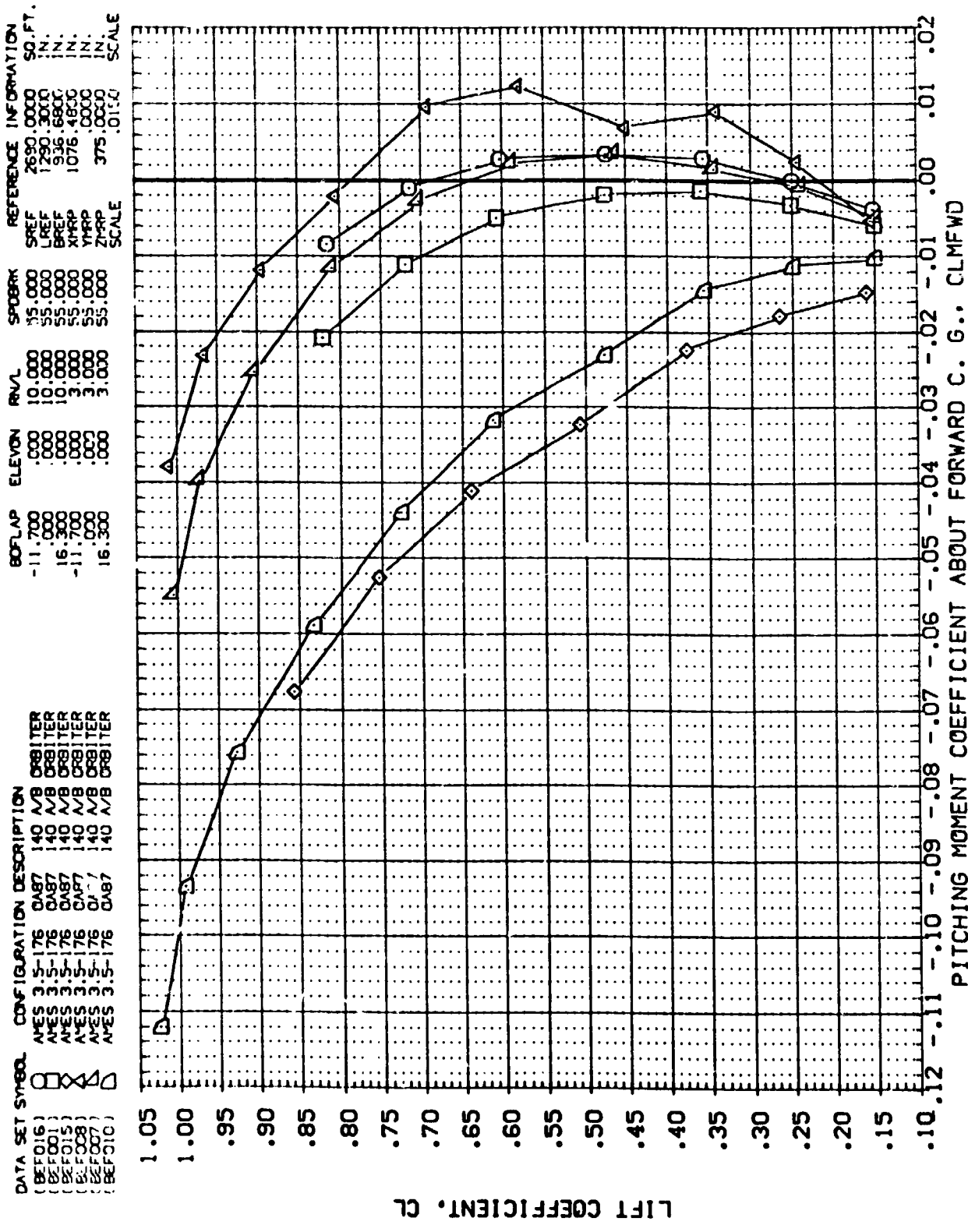


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	ELEVON	R/V/L	SPDBRK	REFERENCE INFORMATION	SO.FT.
(BEF016)	□	AMES 3-5-76 CAB7 140 A/B C7B1TER	-11.700	.000	10.000	55.000	SREF 2690.0000	IN.
(BEF001)	○	AMES 3-5-76 CAB7 140 A/B C7B1TER	-11.700	.000	10.000	55.000	LREF 1290.3000	IN.
(BEF015)	△	AMES 3-5-76 CAB7 140 A/B C7B1TER	-16.300	.000	10.000	55.000	BREF 936.6600	IN.
(BEF008)	◇	AMES 3-5-76 CAB7 140 A/B C7B1TER	-11.700	.000	3.000	55.000	XMRP 1076.4800	IN.
(BEF007)	□	AMES 3-5-76 CAB7 140 A/B C7B1TER	.000	.000	3.000	55.000	YMRP .0000	IN.
(BEF010)	△	AMES 3-5-76 CAB7 140 A/B C7B1TER	16.300	.000	3.000	55.000	ZMRP 375.0000	IN.
						SCALE	.0150	SCALE

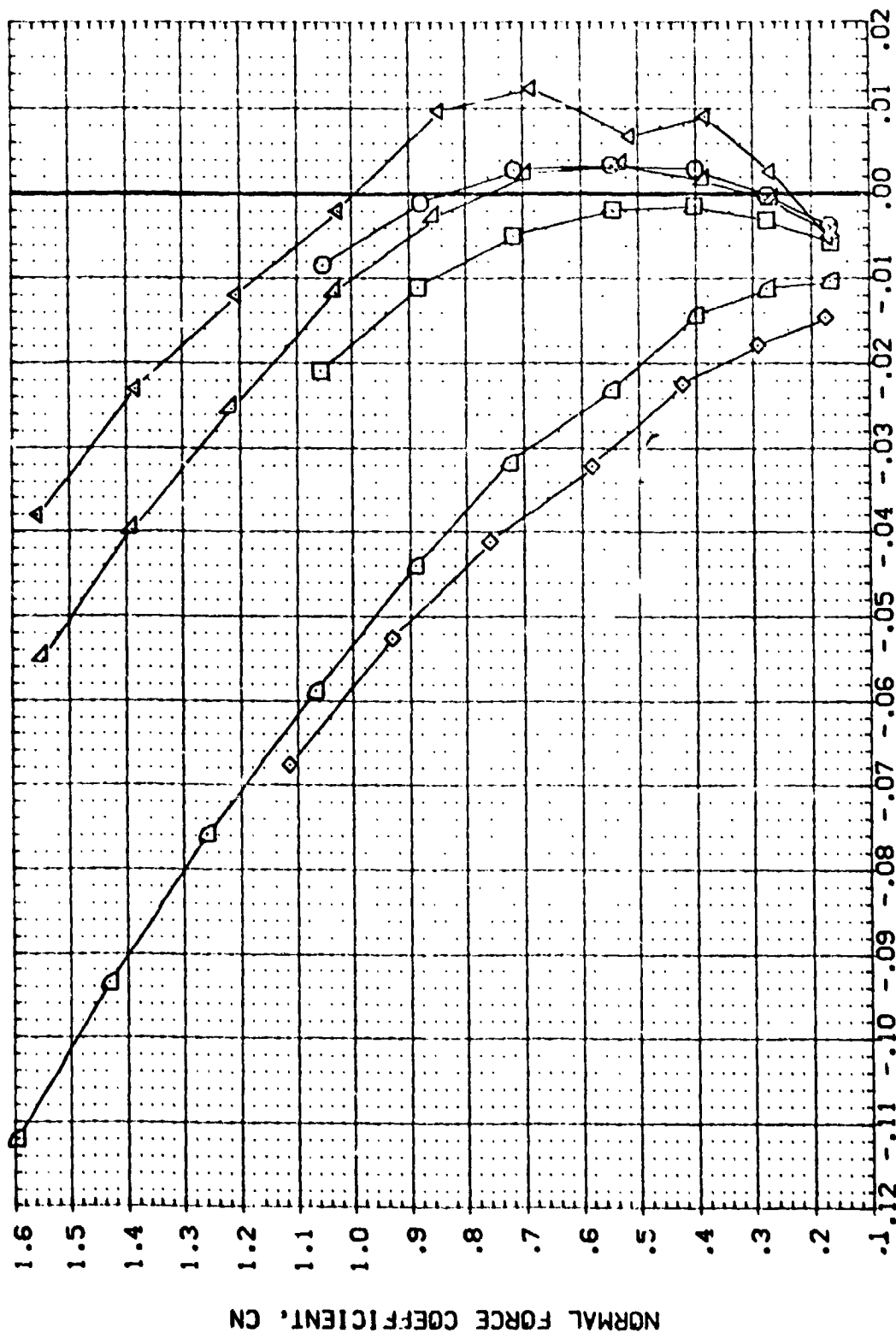


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

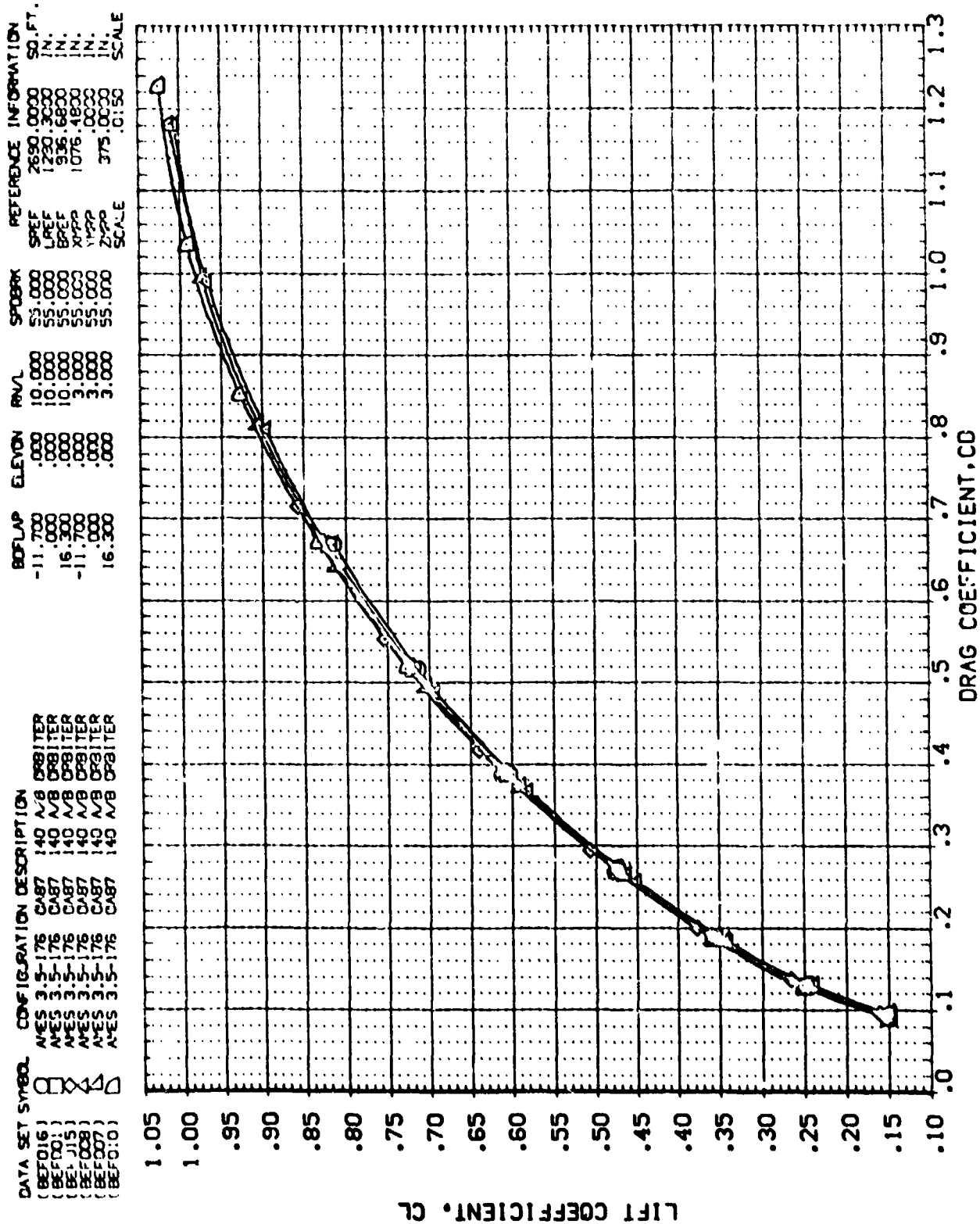


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

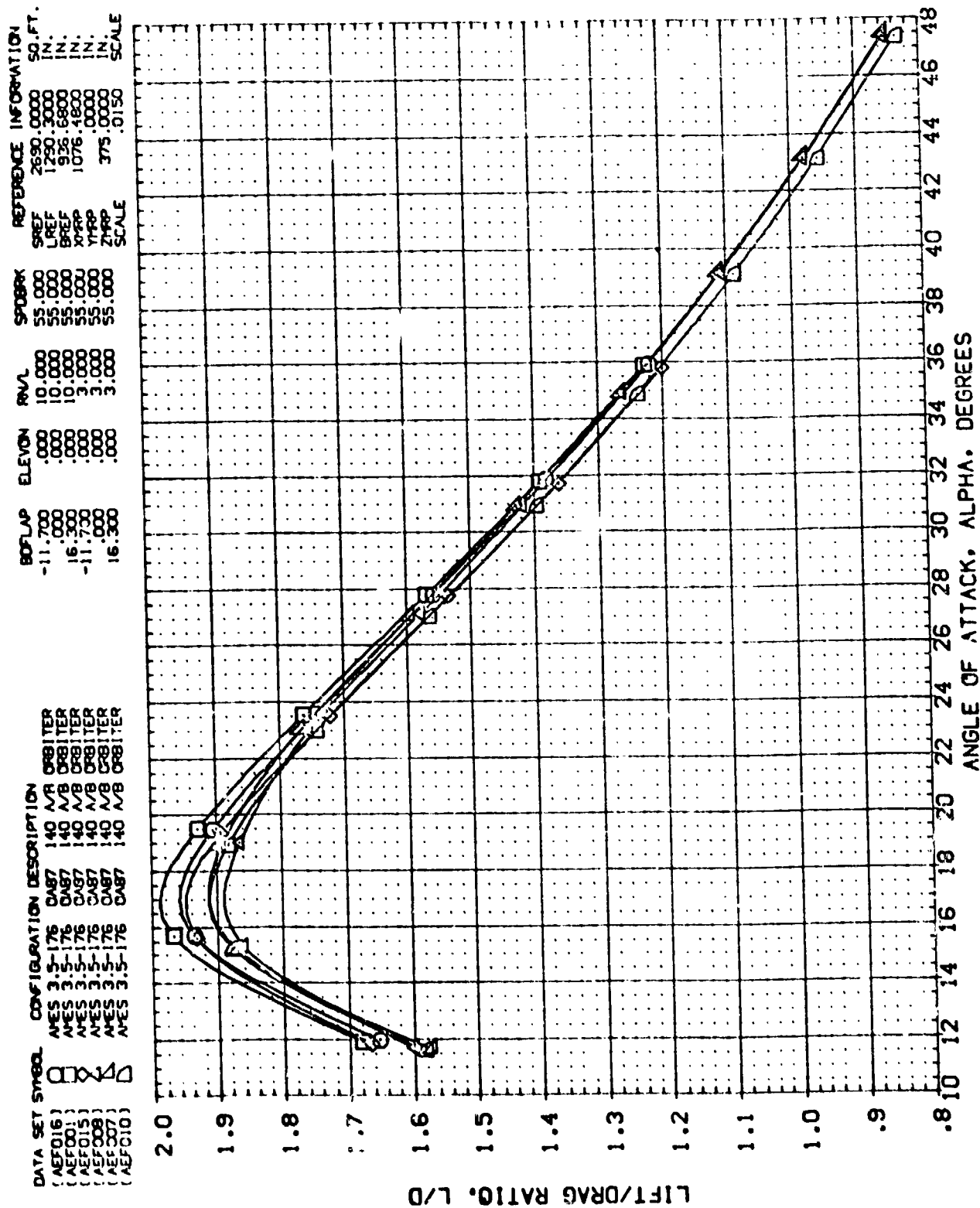


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DEOFLP	ELEVON	RVAL	SPOBRK	REFERENCE INFORMATION
(EFP016)	AVES 3.5-176 CAB7 140 A/B ORBITER	-11.700	.000	10.000	55.000	SREF 2690.0000 50.000
(EFP018)	AVES 3.5-176 CAB7 140 A/B ORBITER	-16.300	.000	10.000	55.000	LREF 1290.0000 10.000
(EFP008)	AVES 3.5-176 CAB7 140 A/B ORBITER	-11.700	.000	3.000	55.000	BREF 936.6800 10.000
(EFP010)	AVES 3.5-176 CAB7 140 A/B ORBITER	16.300	.000	3.000	55.000	XREF 1076.4900 10.000
						YREF .0000 10.000
						ZREF 375.0000 10.000
						SCALE .0150

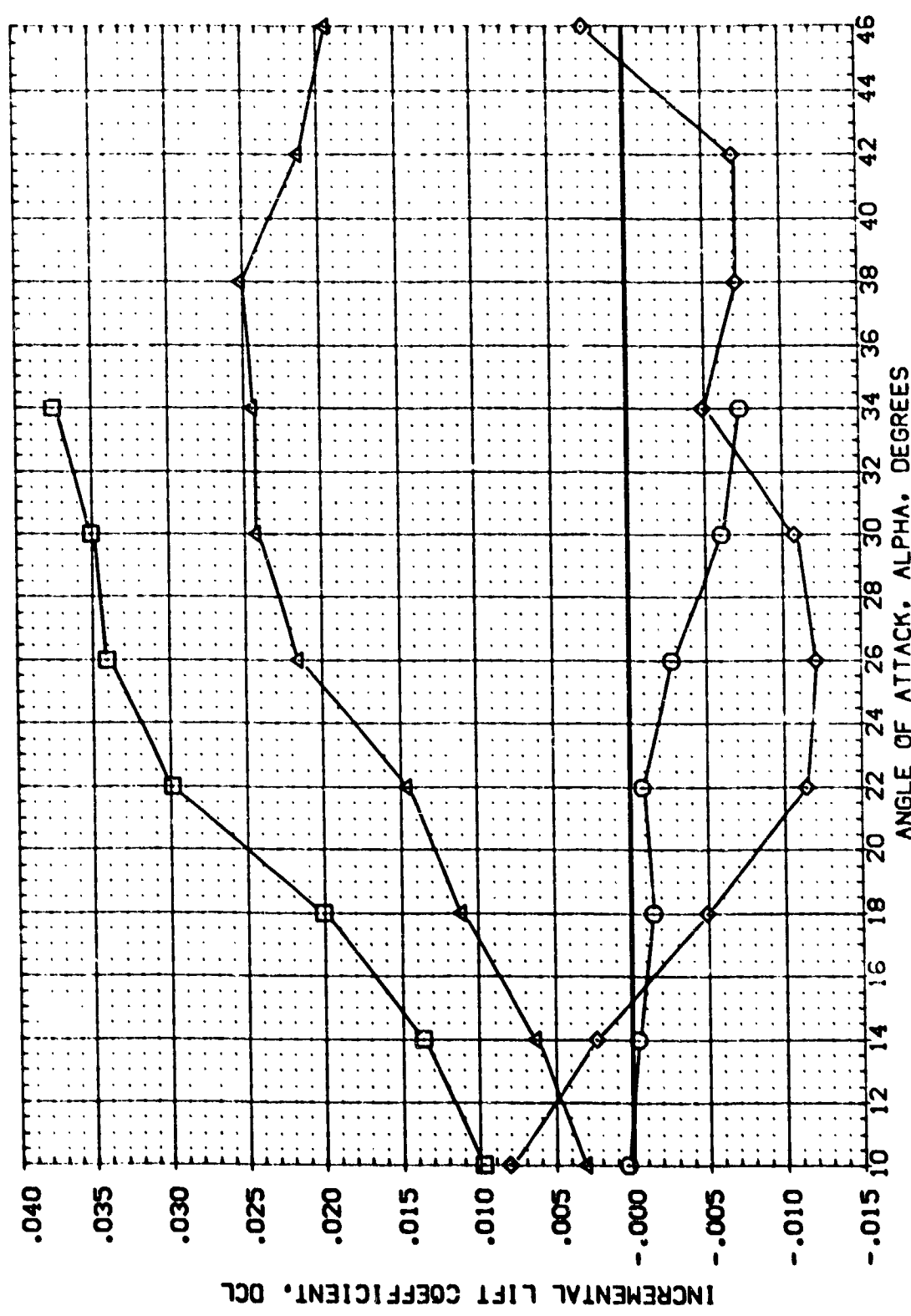


FIG. 11 BODYFLAP EFFECTIVENESS

(MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DRDFLP	ELEVON	RVAL	SPOBRK	REFERENCE INFORMATION
(EEF016)	AVES 3.5-176 C487 140 A/B CRBITER	-11.700	.000	10.000	55.000	SREF 2690.0000 SQ.FT.
(EEF015)	AVES 3.5-176 C487 140 A/B CRBITER	-16.300	.000	10.000	55.000	LREF 1290.3000 IN.
(EEF008)	AVES 3.5-176 C487 140 A/B CRBITER	-11.700	.000	3.000	55.000	BREF 936.6800 IN.
(EEF010)	AVES 3.5-176 C487 140 A/B CRBITER	16.300	.000	3.000	55.000	YREF 1076.4800 IN.
						ZREF 375.0000 IN.
						SCALE .0150

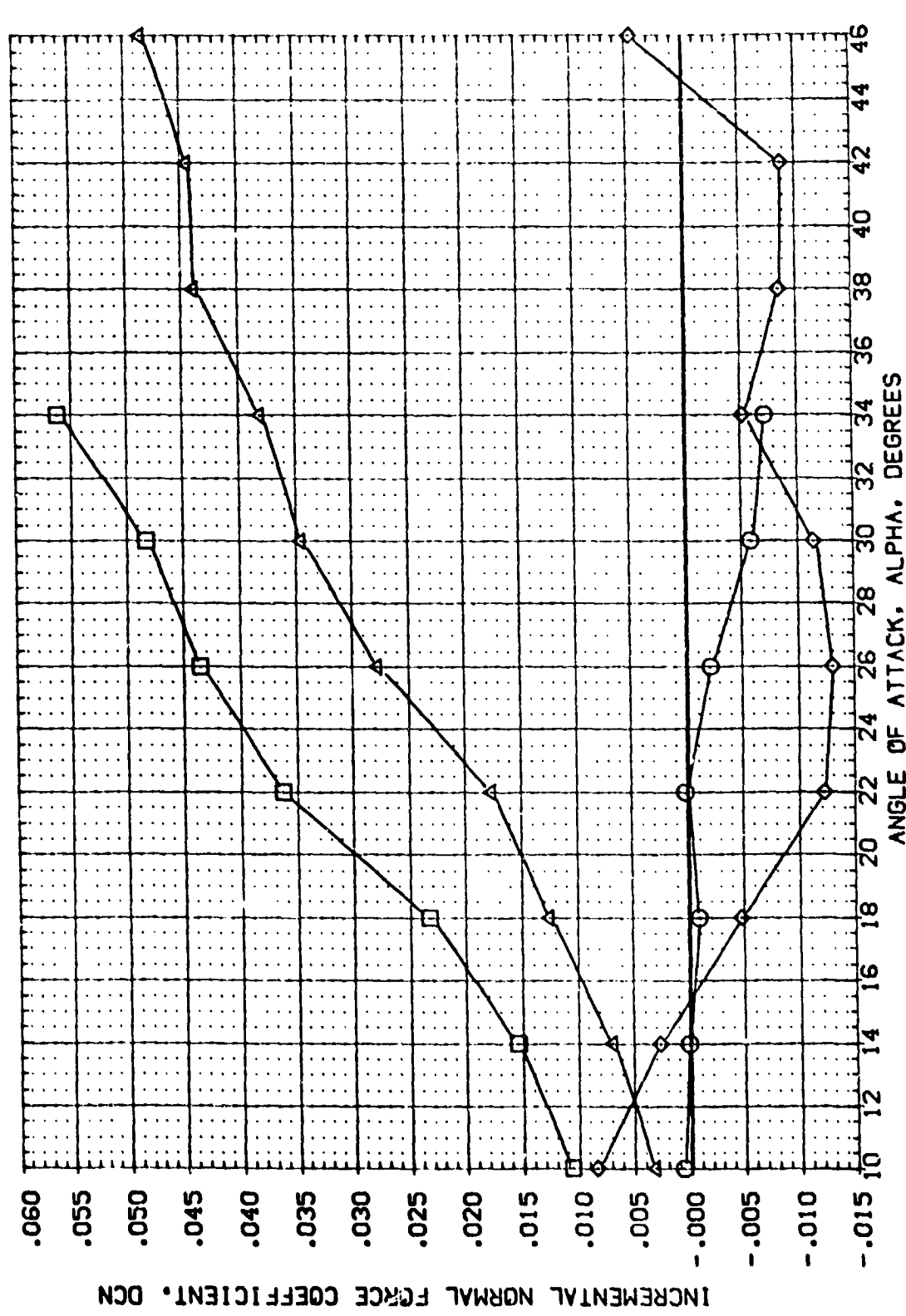


FIG. 11 BODYFLAP EFFECTIVENESS
(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DBDFLP	ELEVON	RN/L	SPOBRK	REFERENCE INFORMATION
(EEF016)	AMES 3.5-176 DAB7 140 A/B OAB1TER	-11.700	.000	10.000	55.000	SREF 2690.0000 SQ.FT.
(EEF015)	AMES 3.5-176 DAB7 140 A/B OAB1TER	-16.300	.000	10.000	55.000	LREF 1290.2000 IN.
(EEF008)	AMES 3.5-176 DAB7 140 A/B OAB1TER	-11.700	.000	3.000	55.000	BREF 536.6800 IN.
(EEF010)	AMES 3.5-176 DAB7 140 A/B OAB1TER	-16.300	.000	3.000	55.000	XPRP 1076.4800 IN.
						YPRP .0000 IN.
						ZPRP .0000 IN.
						SCALE .0150

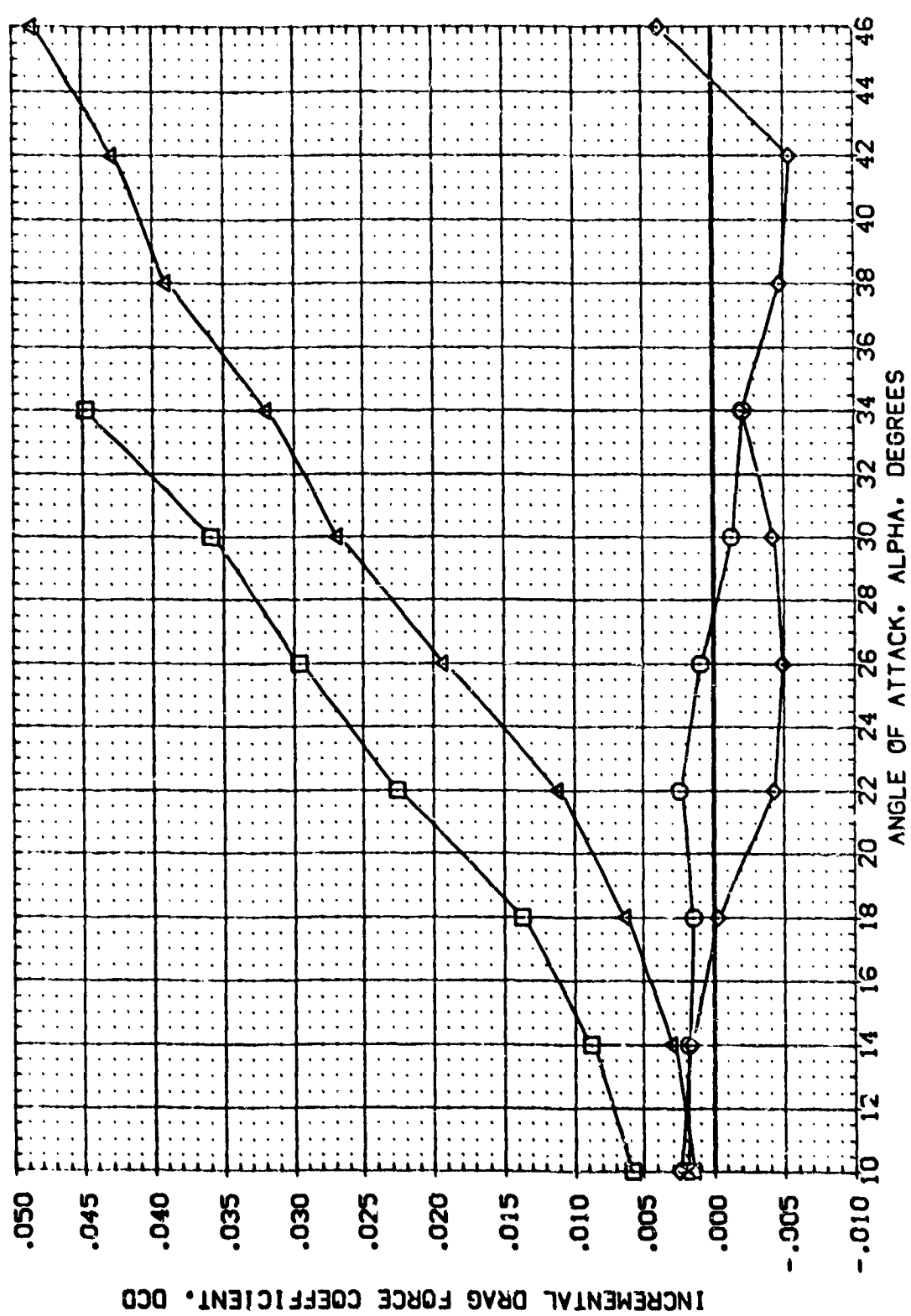


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	OBDFLP	ELEVON	RNVL	SPOBRK	REFERENCE INFORMATION
(EF016)	AVES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	10.000	55.000	SREF 2650.0000 50. FT.
(EF015)	AVES 3.5-176 CAB7 140 A/B CRB1TER	-16.300	.000	10.000	55.000	LREF 1250.3000 IN.
(EF008)	AVES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	3.000	55.000	BREF 936.6800 IN.
(EF010)	AVES 3.5-176 CAB7 140 A/B CRB1TER	-16.300	.000	3.000	55.000	XREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

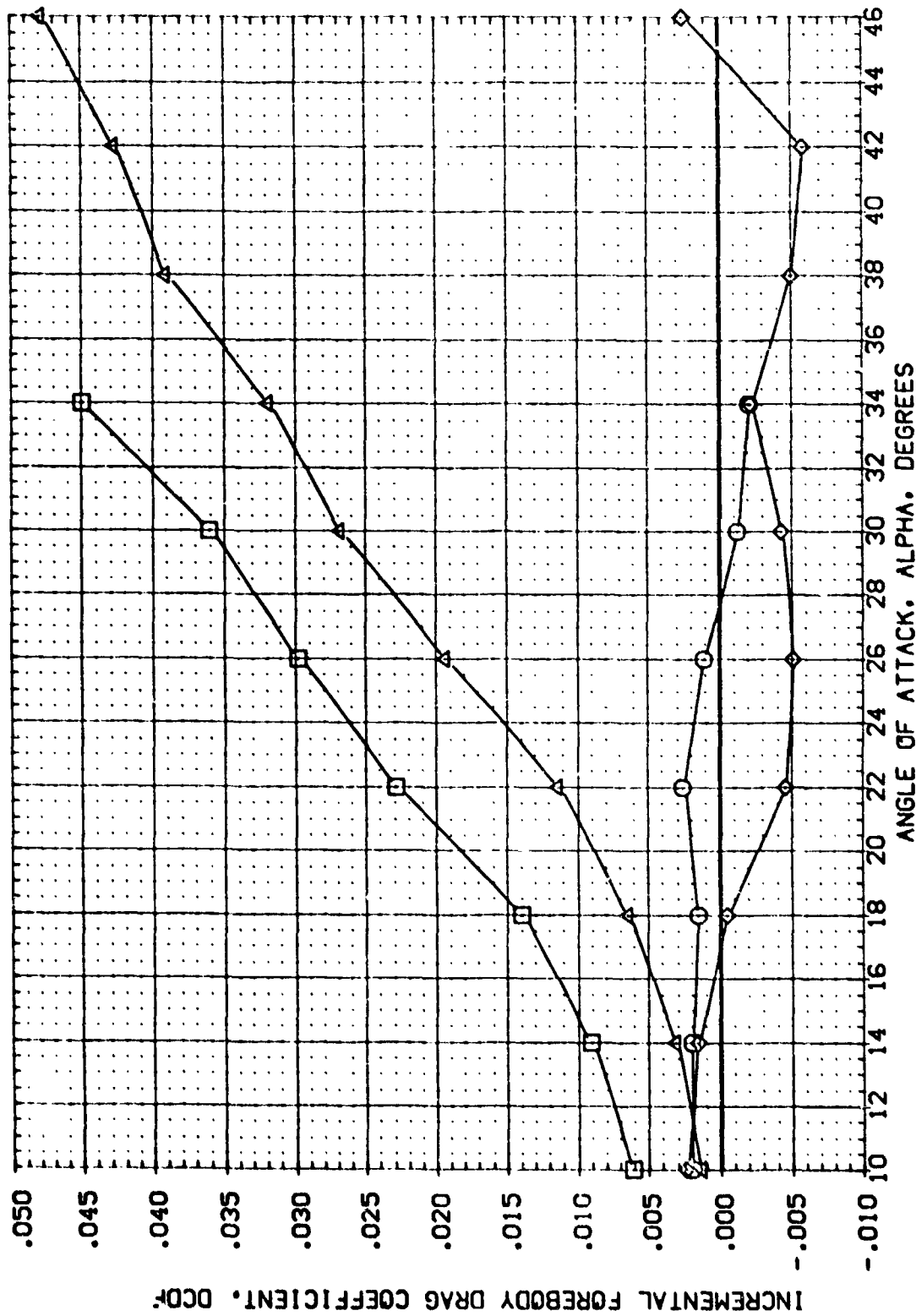


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DOFLP	ELEVON	RNVL	SPOBRK	REFERENCE INFORMATION
(EFO16)	AMES 3.5-176 DAB7 140 A/B DBB1TER	-11.700	.000	10.000	55.000	SREF 2690.0000 SO.FT.
(EFO15)	AMES 3.5-176 DAB7 140 A/B DBB1TER	-16.300	.000	10.000	55.000	LREF 1290.3000 IN.
(EFO08)	AMES 3.5-176 DAB7 140 A/B DBB1TER	-11.700	.000	3.000	55.000	BREF 936.6800 IN.
(EFO10)	AMES 3.5-176 DAB7 140 A/B DBB1TER	16.300	.000	3.000	55.000	XTRP 1076.4800 IN.
						YTRP .0000 IN.
						ZTRP 375.0000 IN.
						SCALE .0150

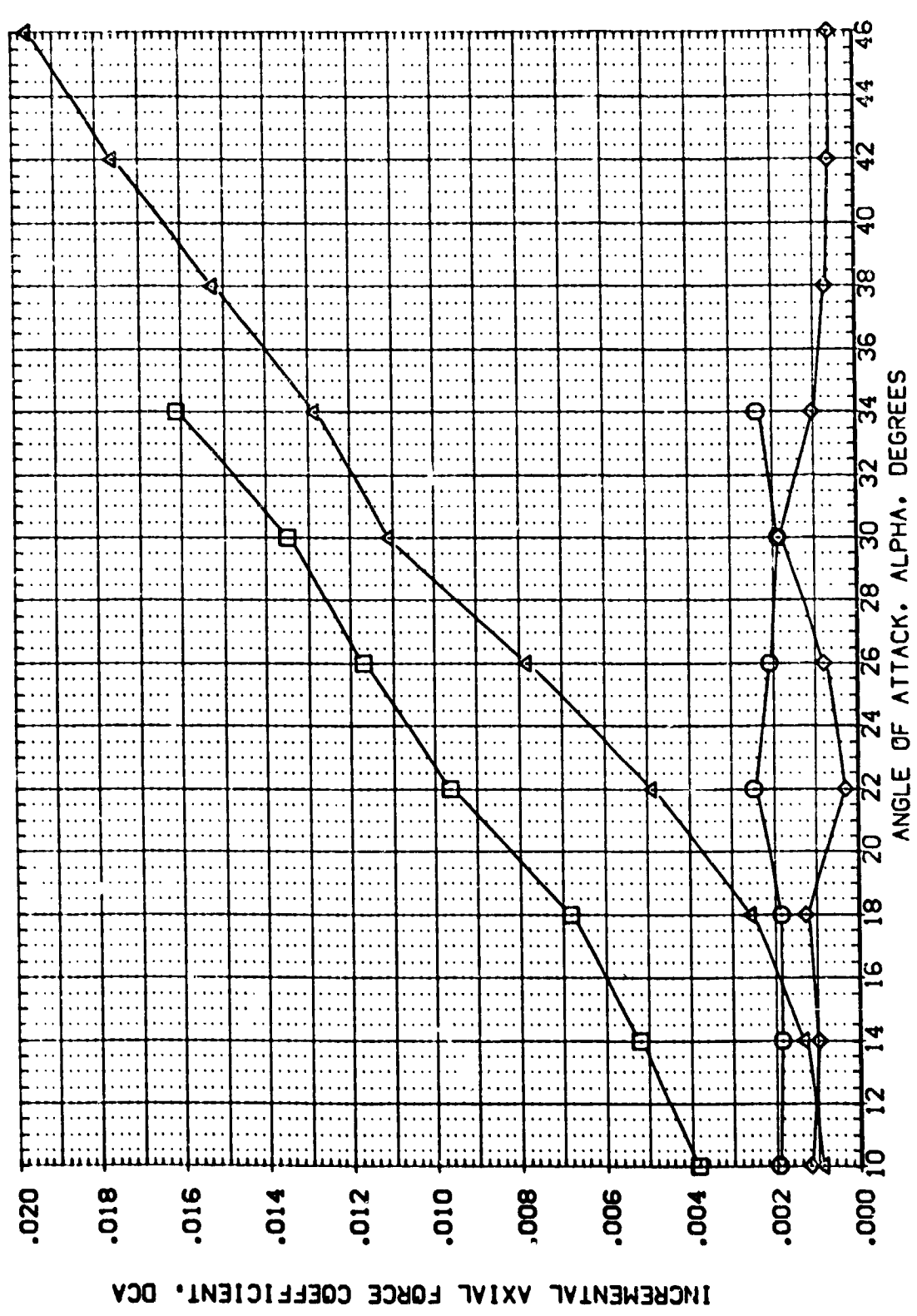


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DBDFUP	E.EVON	RVA	SPDRK	REFERENCE INFORMATION
(EEFO16)	AMES 3.5-176 DB87 140 A/B DB81TER	-11.700	.000	10.000	55.000	SREF 2690.0000 SO.FT.
(EEFO15)	AMES 3.5-176 DB87 140 A/B DB81TER	-16.300	.000	10.000	55.000	LREF 1290.2000 IN.
(EEFO08)	AMES 3.5-176 DB87 140 A/B DB81TER	-11.700	.000	3.000	55.000	BREF 936.5000 IN.
(EEFO10)	AMES 3.5-176 DB87 140 A/B DB81TER	16.300	.000	3.000	55.000	XREF 1076.4000 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

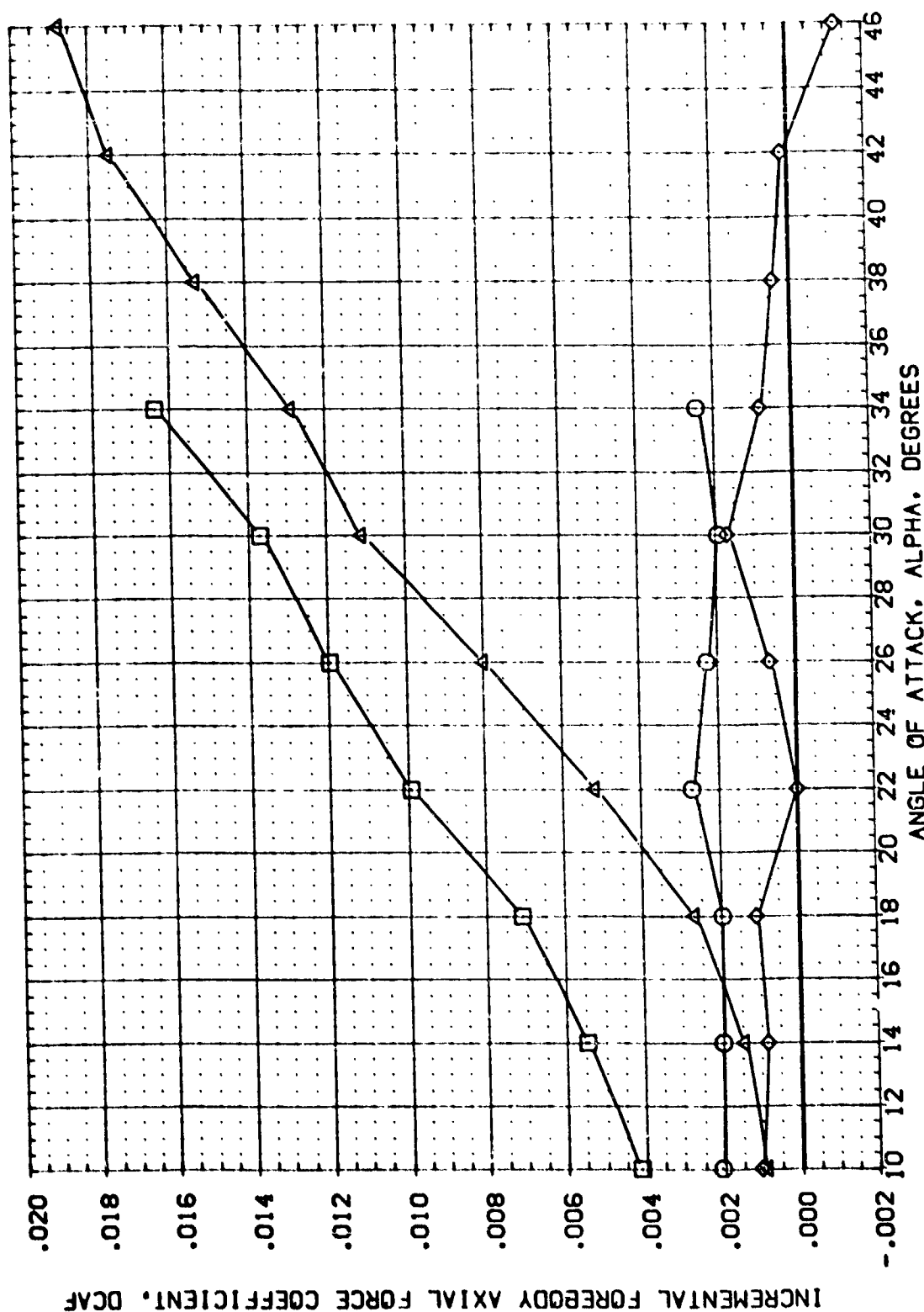


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DBDFLP	ELEVON	RVL	SPOBRK	REFERENCE INFORMATION
(EEF016)	AVES 3.5-176 DB87 140 A/B DB87ITER	-11.700	.000	10.000	55.000	SREF 2690.0000 SQ.FT.
(EEF015)	AVES 3.5-176 DB87 140 A/B DB87ITER	-16.300	.000	10.000	55.000	LREF 1290.3000 IN.
(EEF008)	AVES 3.5-176 DB87 140 A/B DB87ITER	-11.700	.000	3.000	55.000	BREF 936.6800 IN.
(EEF010)	AVES 3.5-176 DB87 140 A/B DB87ITER	-16.300	.000	3.000	55.000	XREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

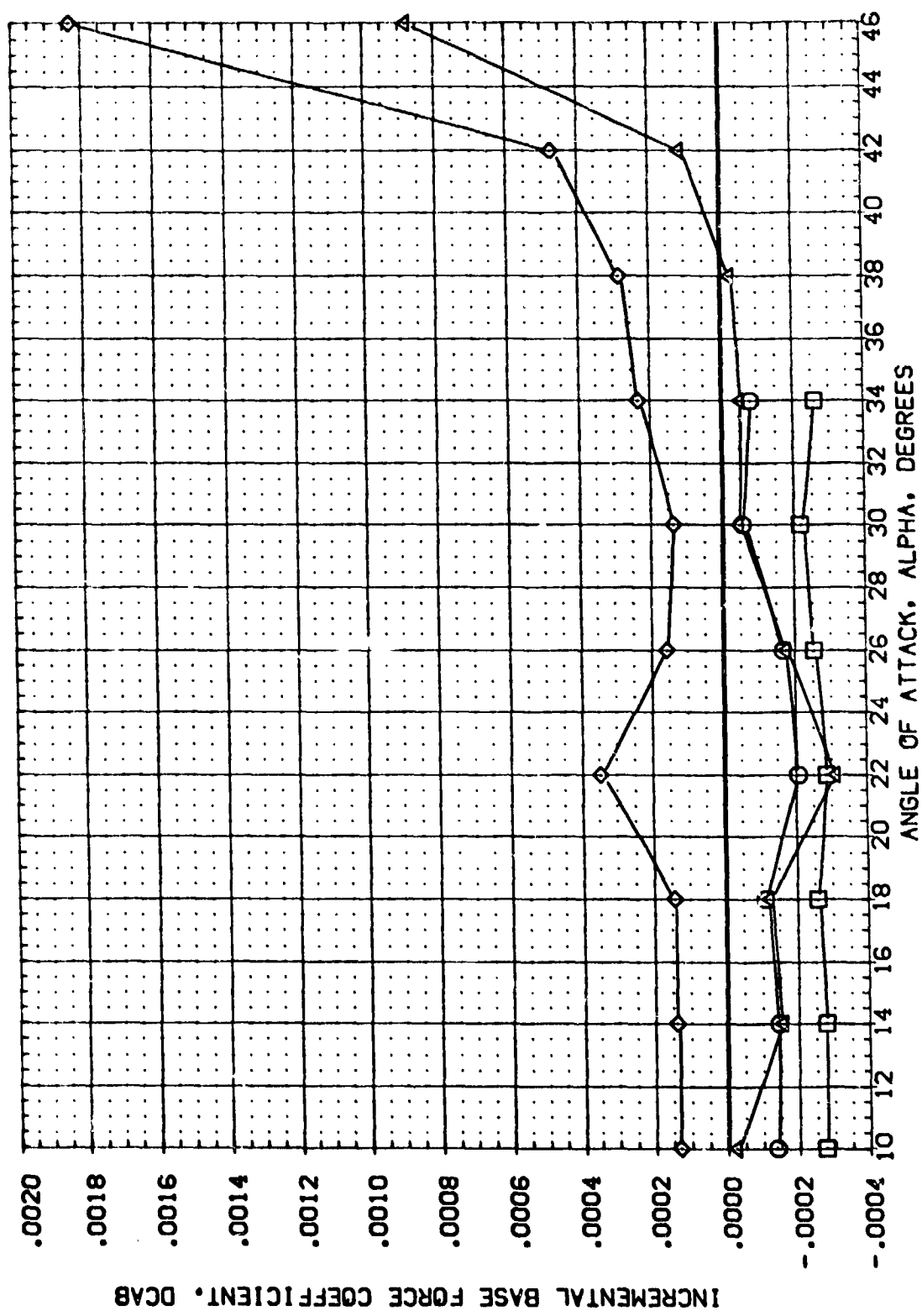


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DBFLP	ELEVON	RN/L	SPDBRK	REFERENCE INFORMATION
(EEFO16)	AVES 3.5-176 DAB7 140 A/B DBBITER	-11.700	.000	10.000	55.000	SREF 2690.0000 SQ.FT.
(EEFO15)	AVES 3.5-176 DAB7 140 A/B DBBITER	-16.300	.000	10.000	55.000	LREF 1290.3000 IN.
(EEFO08)	AVES 3.5-176 DAB7 140 A/B DBBITER	-11.700	.000	3.000	55.000	BREF 936.6800 IN.
(EEFO10)	AVES 3.5-176 DAB7 140 A/B DBBITER	-16.300	.000	3.000	55.000	XMRP 1076.4800 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

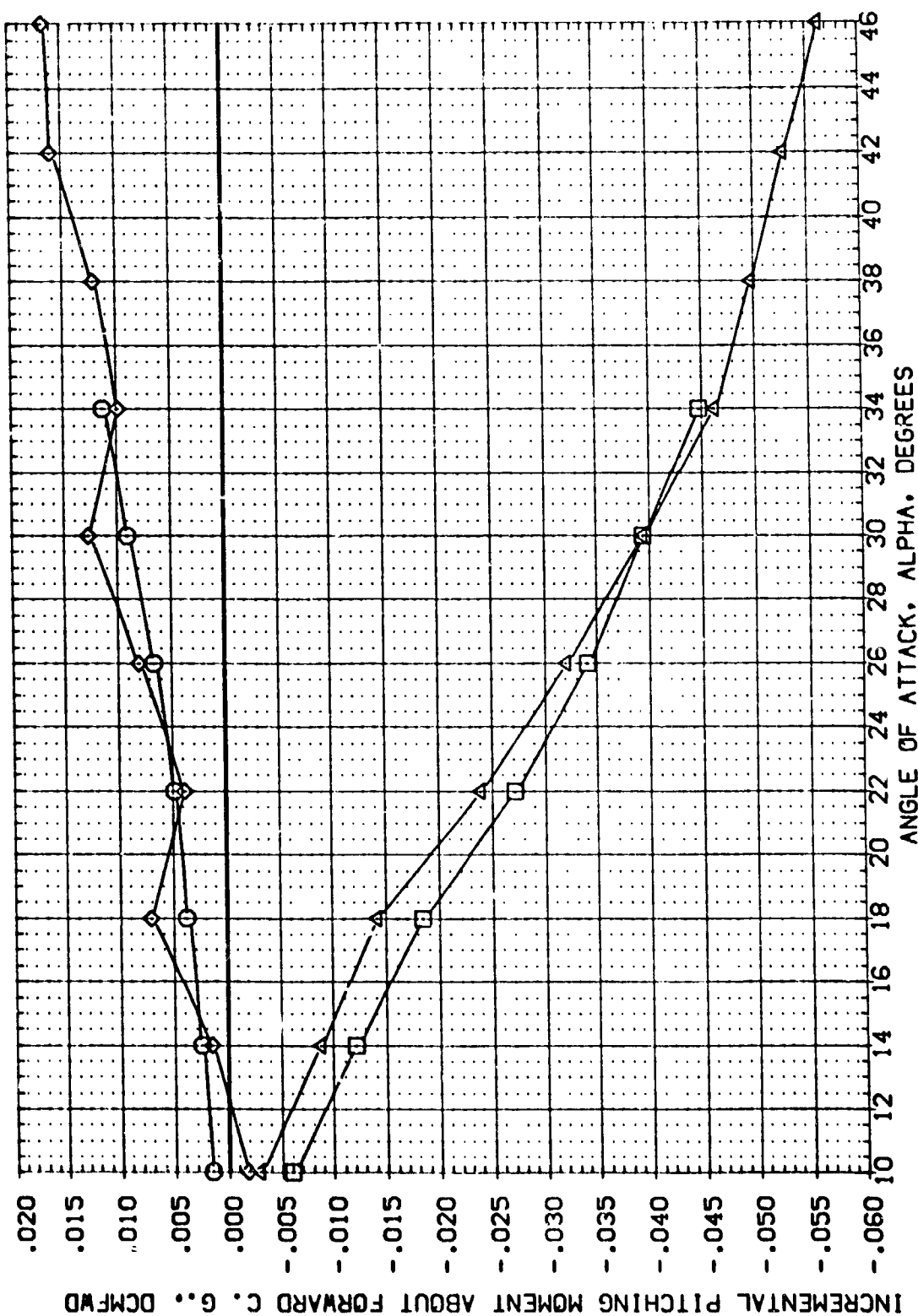


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

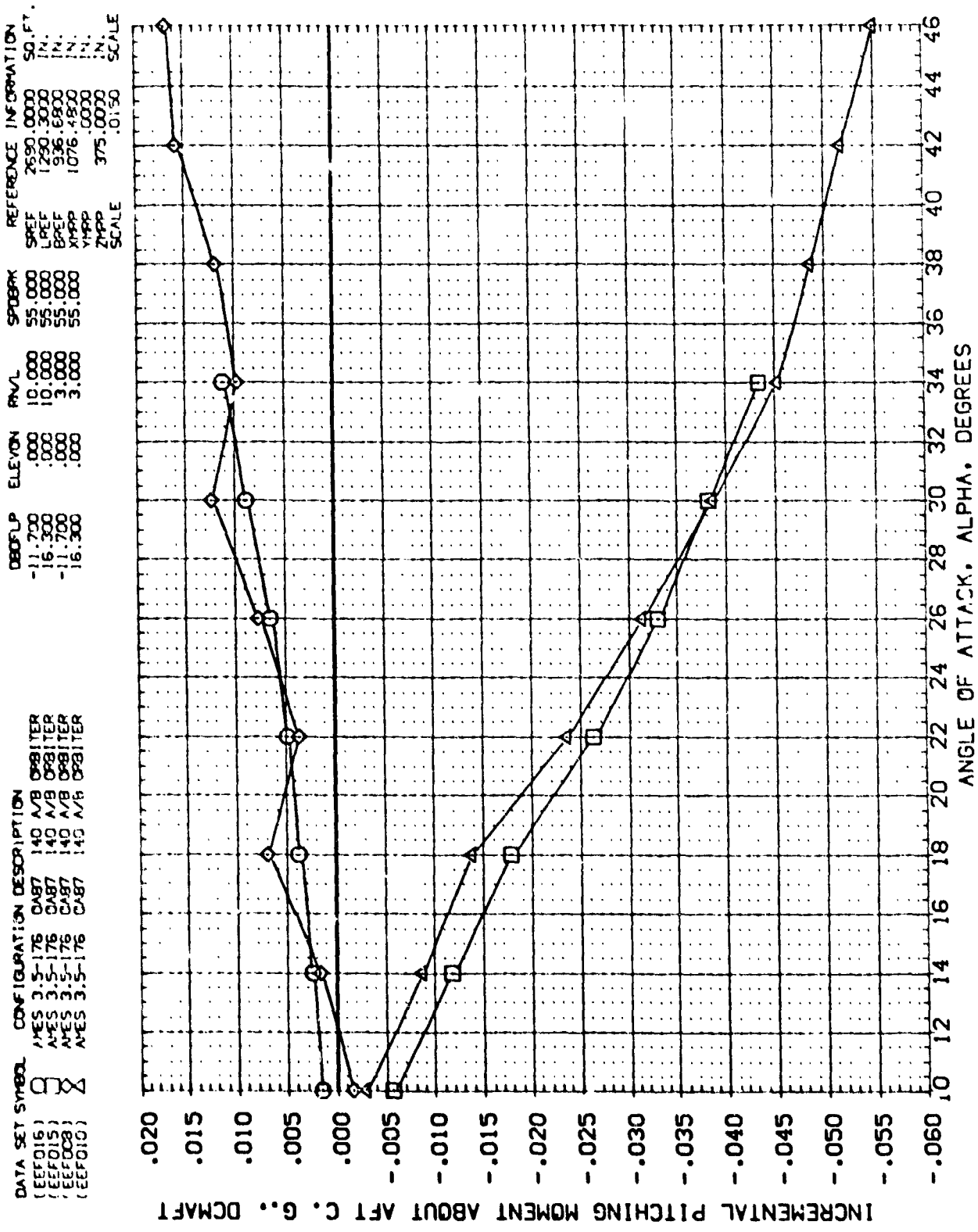


FIG. 11 BODYFLAP EFFECTIVENESS

(A) MACH = 7.32

AMES 3.5-176 0A87 140 A/B ORBITER (GEF016)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	DATA SET	BOFLAP	SREF	REFERENCE INFORMATION
○	10.000		7.320 BETA	.000	GEF015	.000	LREF	2690.0000 SO.FT.
□	20.000	AILRON	.000 ELEVON	.000	GEF015	.000	BREF	1290.3000 IN.
◇	30.000	RUDDER	.000 SPOBRK	55.000	GEF015	.000	XMRP	936.6800 IN.
		RV/L	10.000				ZMRP	1076.4800 IN.
							SCALE	.0000 IN.
								375.0000 IN.
								.0150

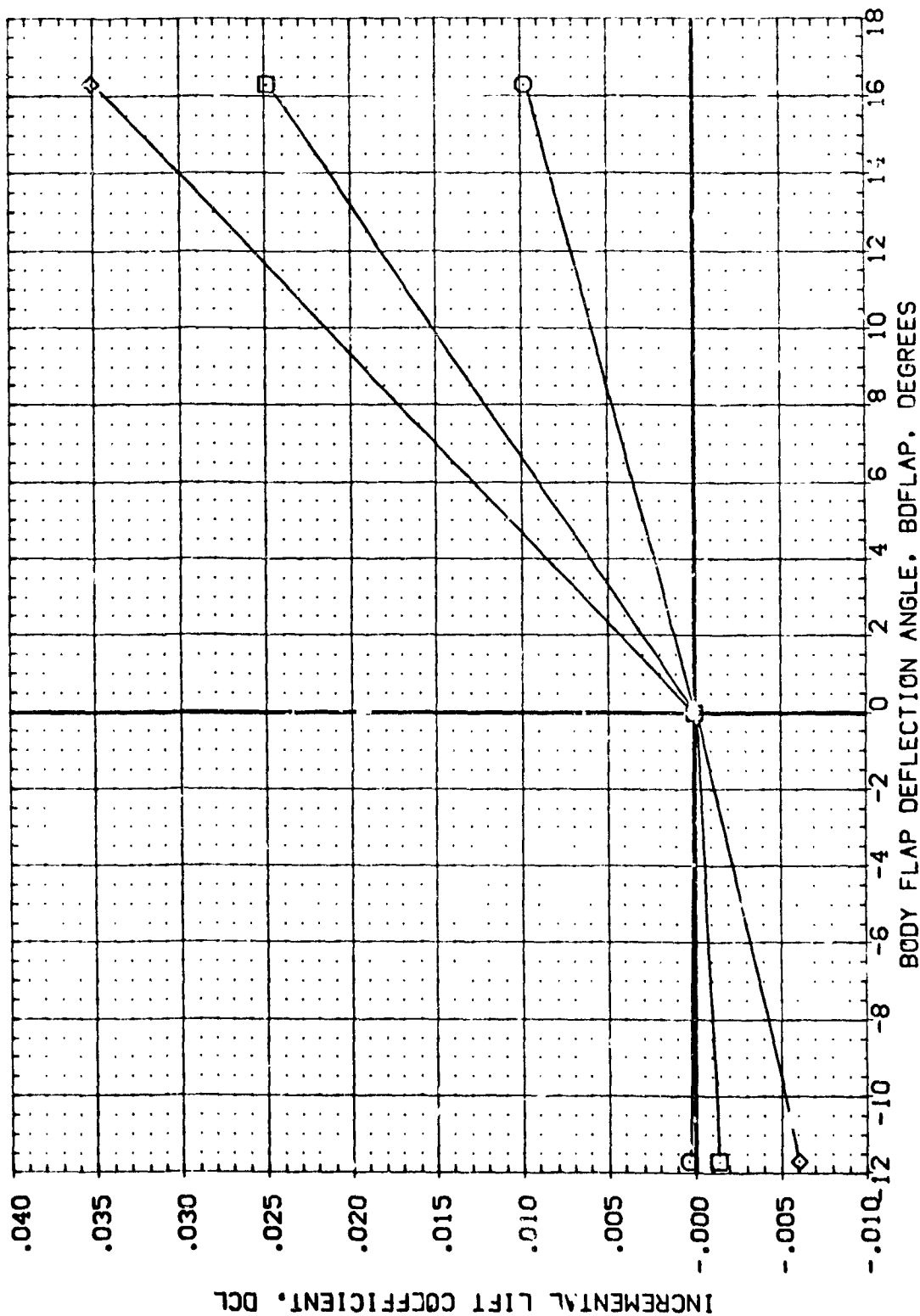


FIG. 11 BODYFLAP EFFECTIVENESS

(GEF016)

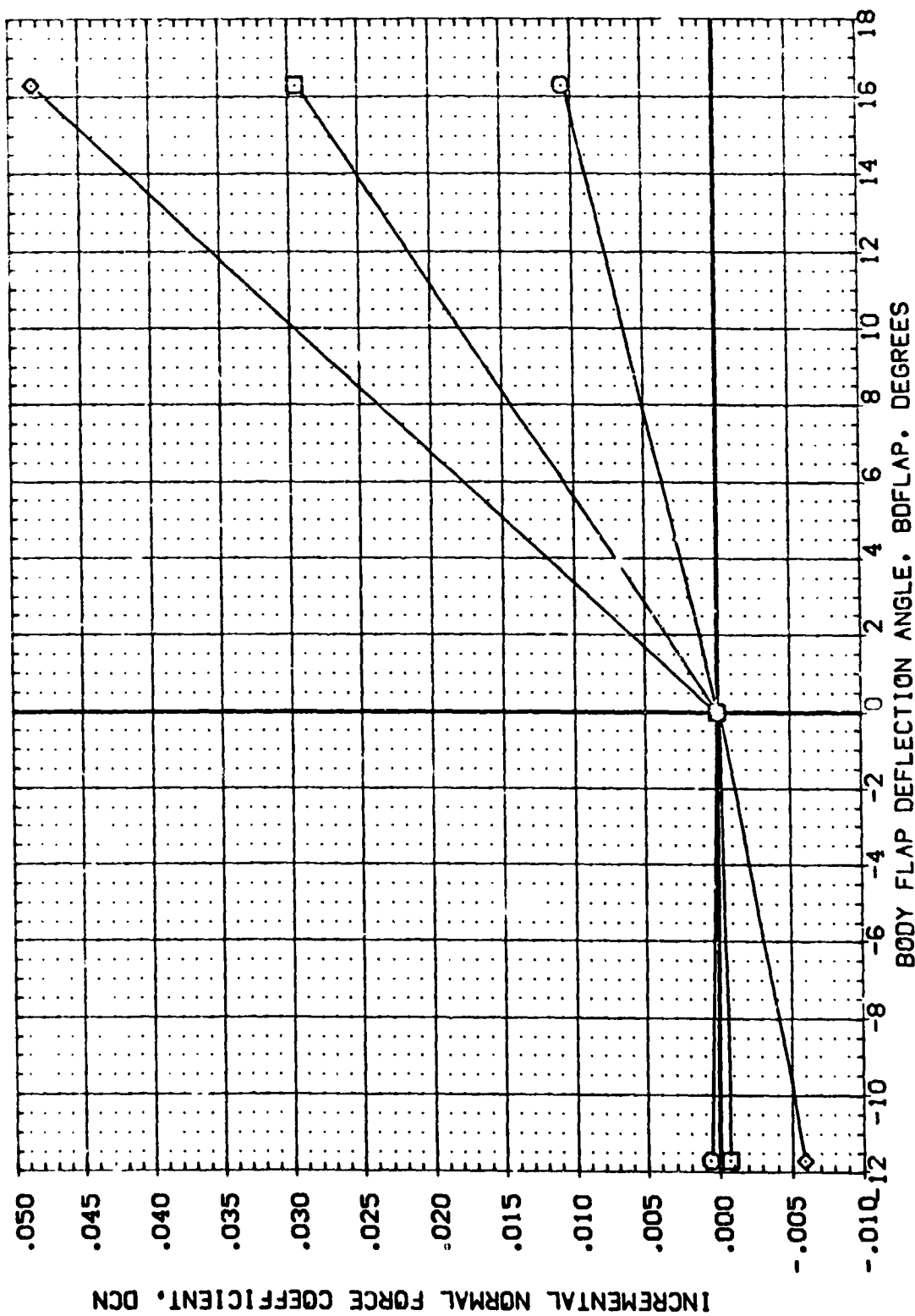
[illegible]

FIG. 11 BODYFLAP EFFECTIVENESS

AMES 3.5-176 0A87 140 A/B ORBITER (GEFO16)

SYMBOL	ALPHA	PARAMETRIC VALUES			DATA SOURCE		REFERENCE INFORMATION			
		MACH	BETA	ELEVON	BOFLAP	DATASET	BOFLAP	SREF	LREF	3.FY.
○	10.000	7.320	.000	.000	.000	GEFO16	.000	2690.0000	1290.3000	IN.
□	20.000	.000	.000	.000	-11.700	GEFO01	.000	936.6800	1076.4900	IN.
◇	30.000	.000	.000	.000	16.300			375.0000		IN.
										SCALE
										SCALE

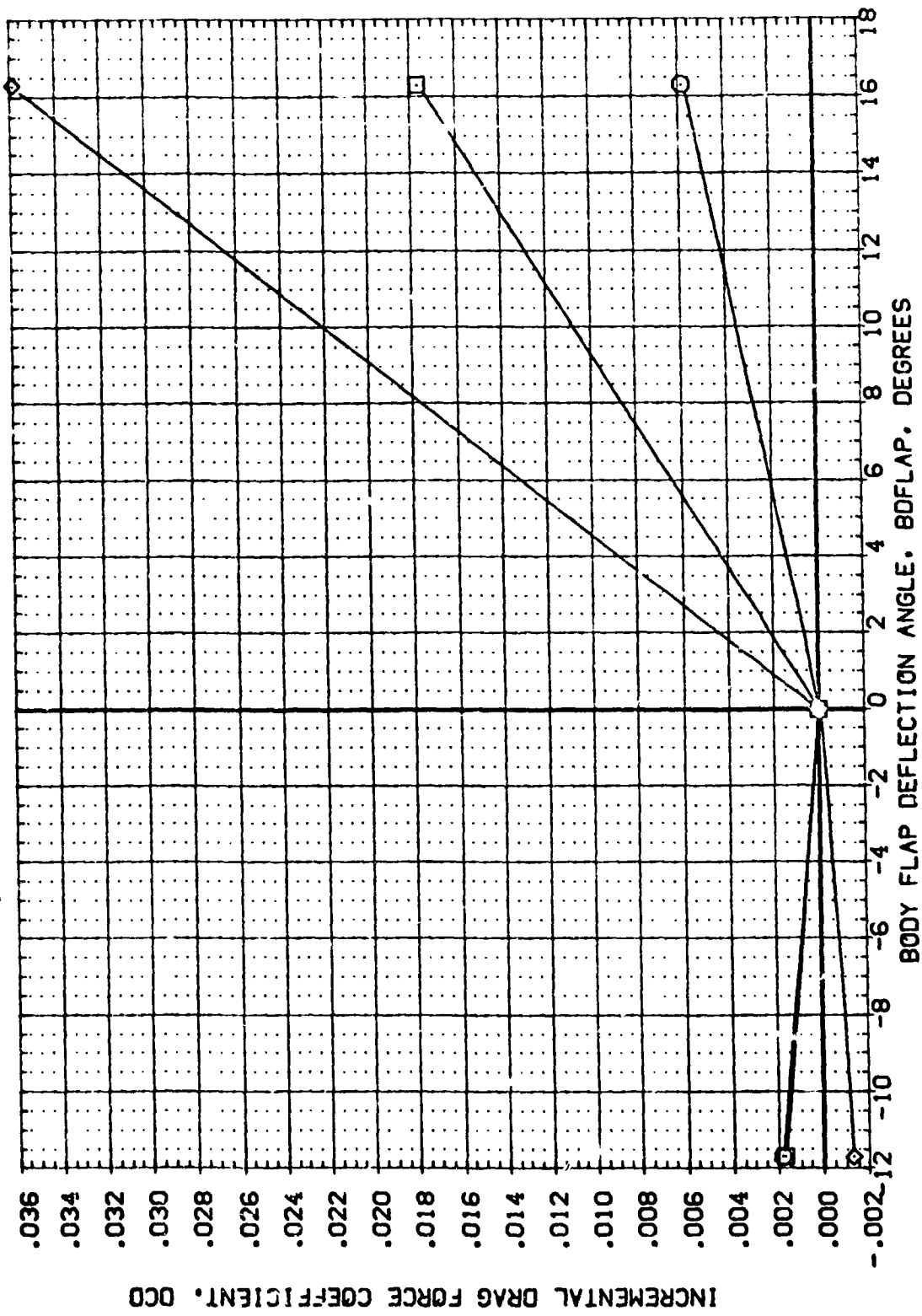


FIG. 11 BODYFLAP EFFECTIVENESS

AMES 3.5-176 0A87 140 A/B ORBITER (GEF016)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	BOFLAP	BOFLAP	REFERENCE INFORMATION
○	10.000	7.320	BETA	.000	GEF016	2690.0000	50. FT.
□	20.000	.000	ELEVON	.000	GEF016	1290.3000	IN.
◇	30.000	.000	SPOBRK	55.000	GEF015	936.6800	IN.
		10.000	RUDDER	16.300	GEF015	1076.4800	IN.
			RV/L			375.0000	IN.
						SCALE	SCALE
						.0150	

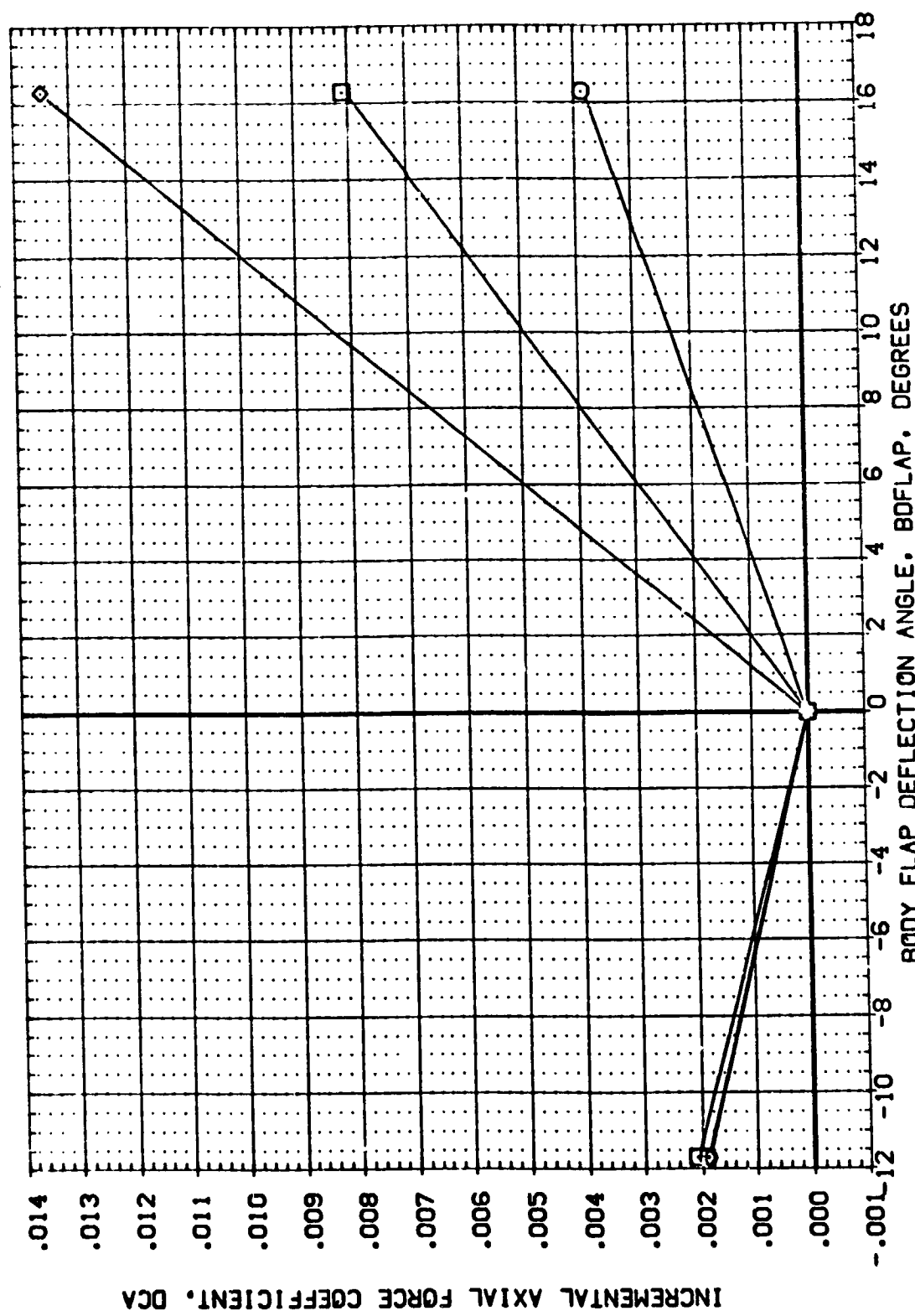


FIG. 11 BODYFLAP EFFECTIVENESS

AMES 3.5-176 0A87 140 A/B ORBITER (GEF016)

SYMBOL	PARAMETRIC VALUES					DATA SOURCE			REFERENCE INFORMATION					
	ALPHA	MACH	AILRON	RUDDER	RVNL	BETA	ELEVON	SPDBRK	BOFLAP	DATASET	BOFLAP	SREF	2690.0000	50.FT.
□	10.000					7.320			.000	DATASET	BOFLAP	LREF	1290.3000	IN.
□	20.000					.000	ELEVON		.000	GEF016	-11.700	BREF	925.6800	IN.
◇	30.000					.000	SPDBRK		55.000	6.7 015	16.300	XMRP	1076.4800	IN.
						10.000						YMRP	.0000	IN.
												ZMRP	375.0000	IN.
												SCALE	.0150	SCALE

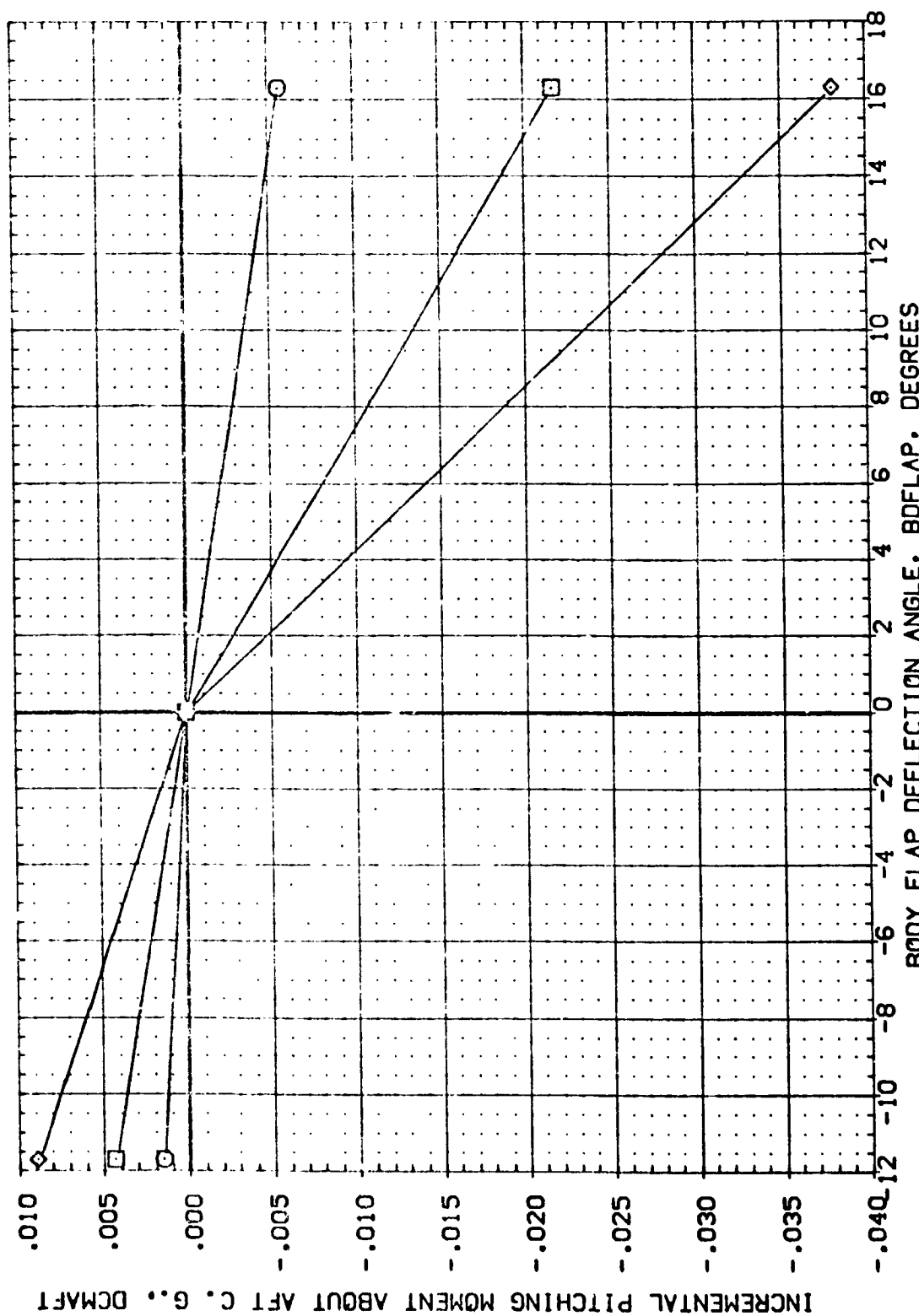


FIG. 11 BODYFLAP EFFECTIVENESS

AMES 3.5-176 0A87 140 A/B ORBITER (GEF008)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	DATASET	BDFLAP	SREF	REFERENCE INFORMATION
○	10.000		7.320 BETA	BDFLAP	.000	.000	2690.0000	50. FT.
□	20.000	ALL CON	.000 ELEVON	.000 DATASET	.000 GEF008	.000	1290.3000	IN.
◇	30.000	RUDDER	.000 SPOBRK	55.000 GEF010	16.300		536.6800	IN.
△	40.000	RVL	3.000				1076.4800	IN.
							375.0000	IN.
							375.0000	SCALE
							.0150	SCALE

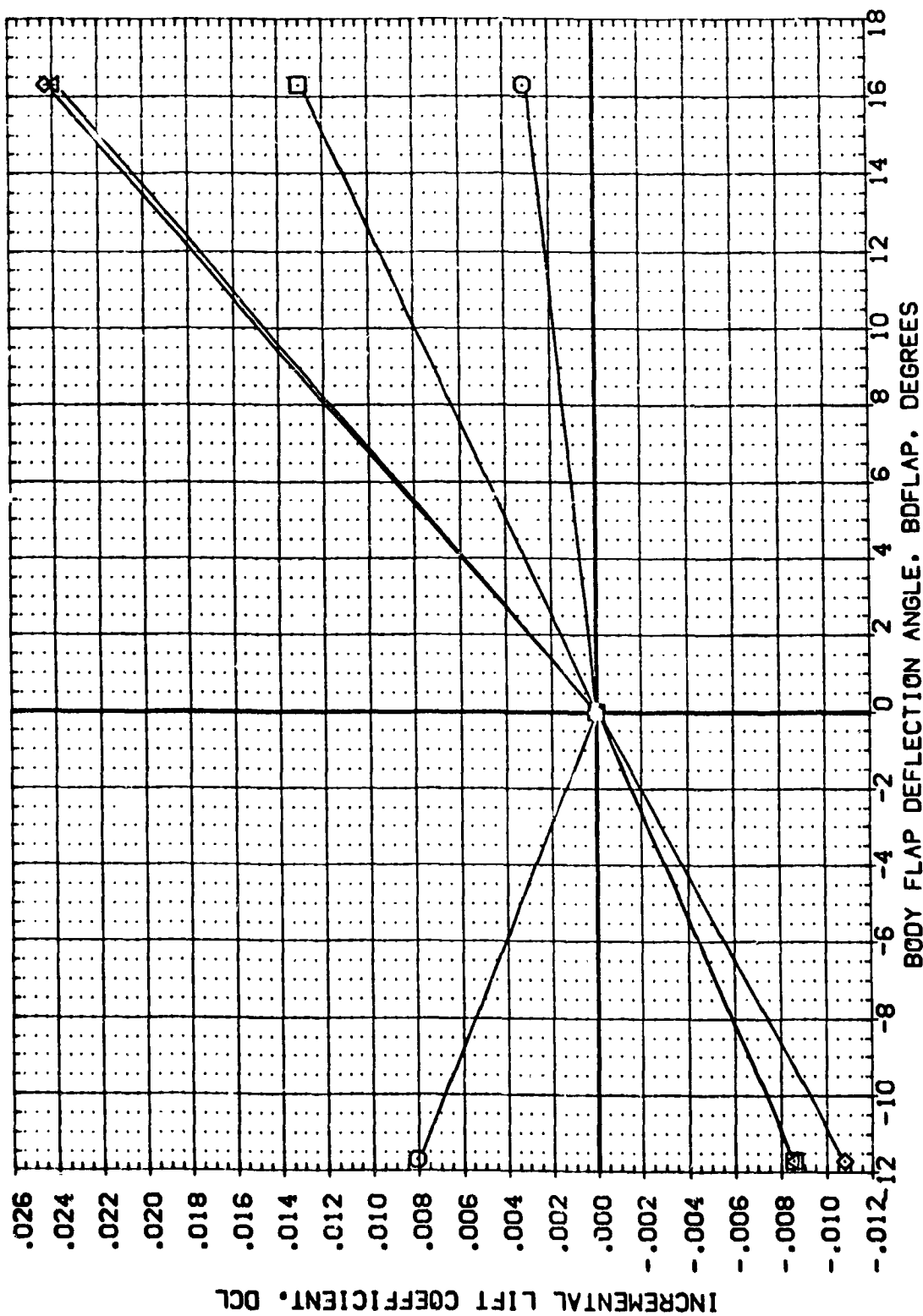


FIG. 11 BODYFLAP EFFECTIVENESS

AMES 3.5-176 OA87 140 A/B ORBITER (GEF008)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	BOFLAP	REFERENCE INFORMATION
○	10.000	7.320	BETA	BOFLAP	SREF	2690.0000 SQ.FT.
□	20.000	.000	ELEVON	BOFLAP	LREF	1790.3000 IN.
◇	30.000	.000	SPOILER	-11.700	BREF	936.6900 IN.
△	40.000	3.000		16.300	XMRP	1076.4800 IN.
					YMRP	375.0000 IN.
					ZMRP	SCALE
					SCALE	.0150

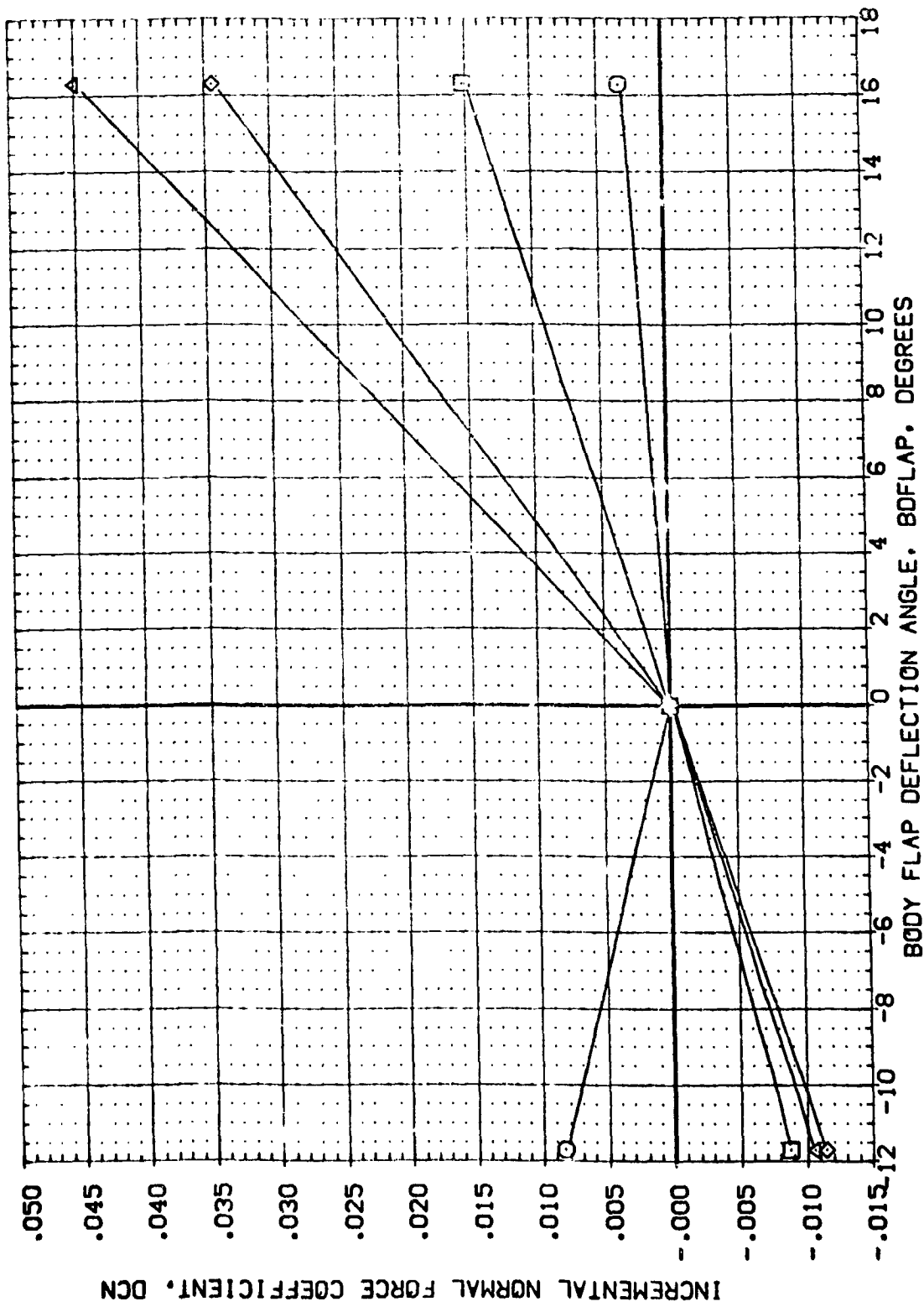


FIG. 11 BODYFLAP EFFECTIVENESS

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	BOFLAP	REF	REFERENCE INFORMATION
○	10.000	7.320	BETA	.000	.000	SREF	2690.0000 SQ.FT.
□	20.000	.000	ELEVON	.000	.000	LREF	1290.3000 IN.
◇	30.000	.000	SPOBRK	55.000	.000	BREF	936.6800 IN.
△	40.000	3.000	RVL	16.300	.000	XREF	1076.4800 IN.
					.000	YREF	375.0000 IN.
					.0150	ZREF	SCALE

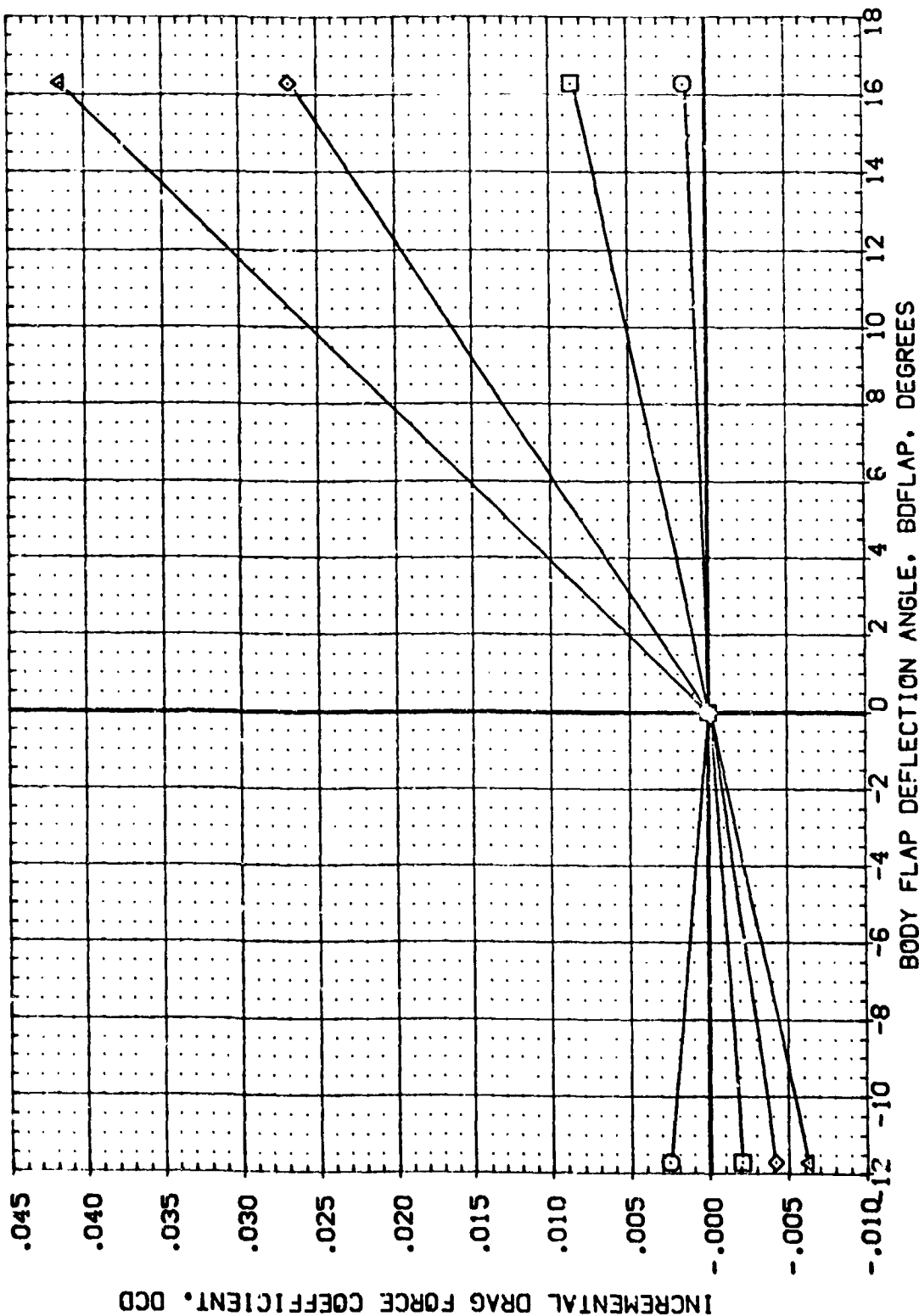


FIG. 11 BODYFLAP EFFECTIVENESS

AMES 3.5-176 0A87 140 A/B CRBITER (GEF008)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	BOFLAP	DATASET	BOFLAP	SREF	REFERENCE INFORMATION	SO. FT.
○	10.000		7.320 BETA	.000 DATASET	.000	GEF008	.000	1290.0000	LREF	1290.0000
□	20.000		.000 ELEVON	.000 GEF008	-11.700	GEF007	.000	536.6800	BREF	536.6800
◇	30.000		.000 SPOCK	55.000 GEF013	16.300			1076.4800	YMRP	1076.4800
△	40.000		3.000					375.0000	ZMRP	375.0000
									SCALE	.0150

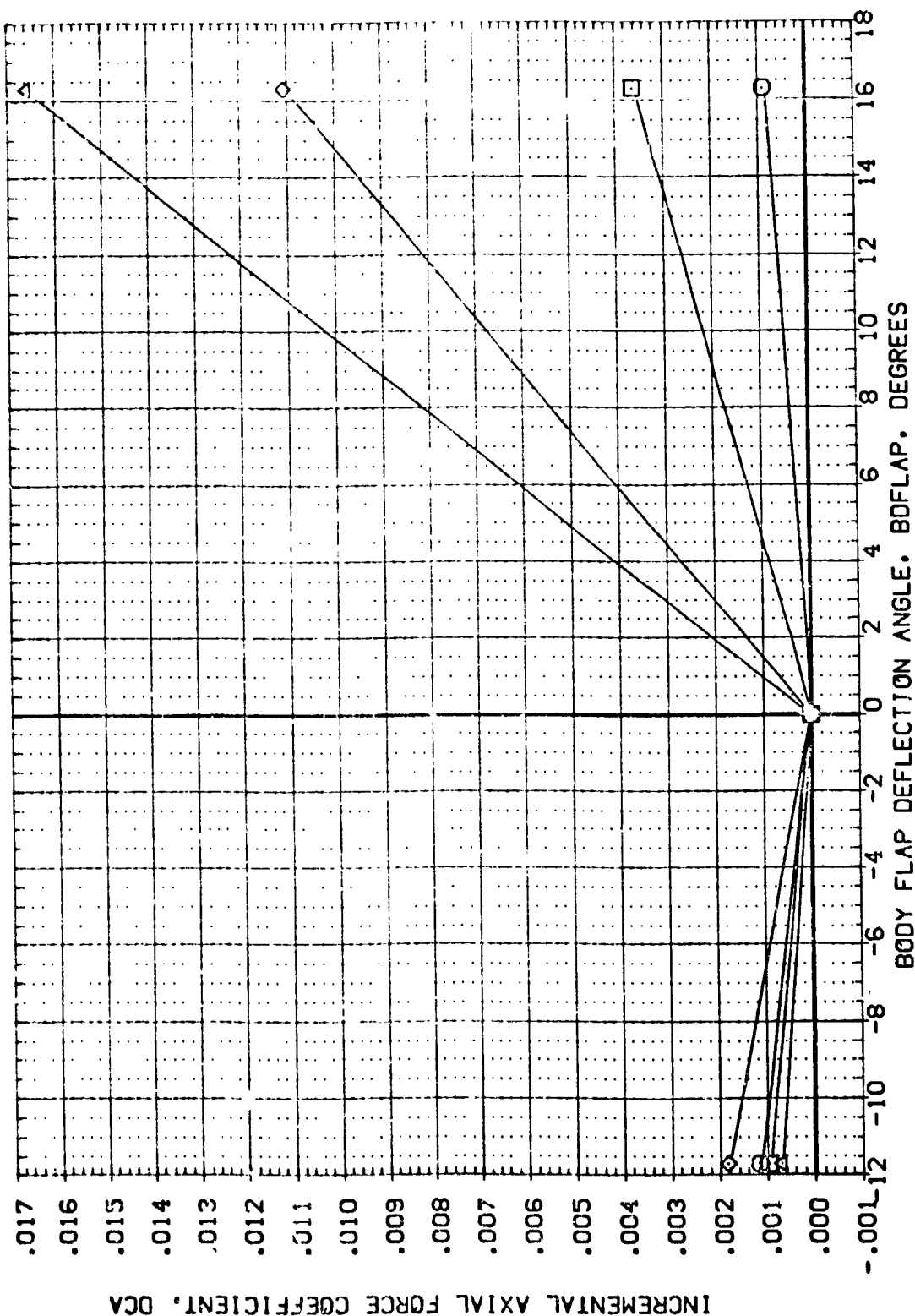


FIG. 11 BODYFLAP EFFECTIVENESS

(800 F33G)

SYMBOL	ALPHA	PARAMETRIC VALUES			DATA SOURCE		BOFLAP	SREF	REFERENCE INFORMATION	
○	10.000	MACH	7.320	BETA	.000	BOFLAP	DATASET	SREF	2650.0000	SQ.FT.
□	20.000	AIRLN	.000	ELEVON	.000	-11.700	GEF008	LREF	1290.3000	
◇	30.000	RUDDER	.000	SPOBRK	55.000	16.300	GEF010	BREF	936.6800	IN.
△	40.000	RNV	3.000					XPRP	1076.4800	IN.
								YPRP	.0000	IN.
								ZPRP	375.0000	IN.
								SCALE	.0150	SCALE

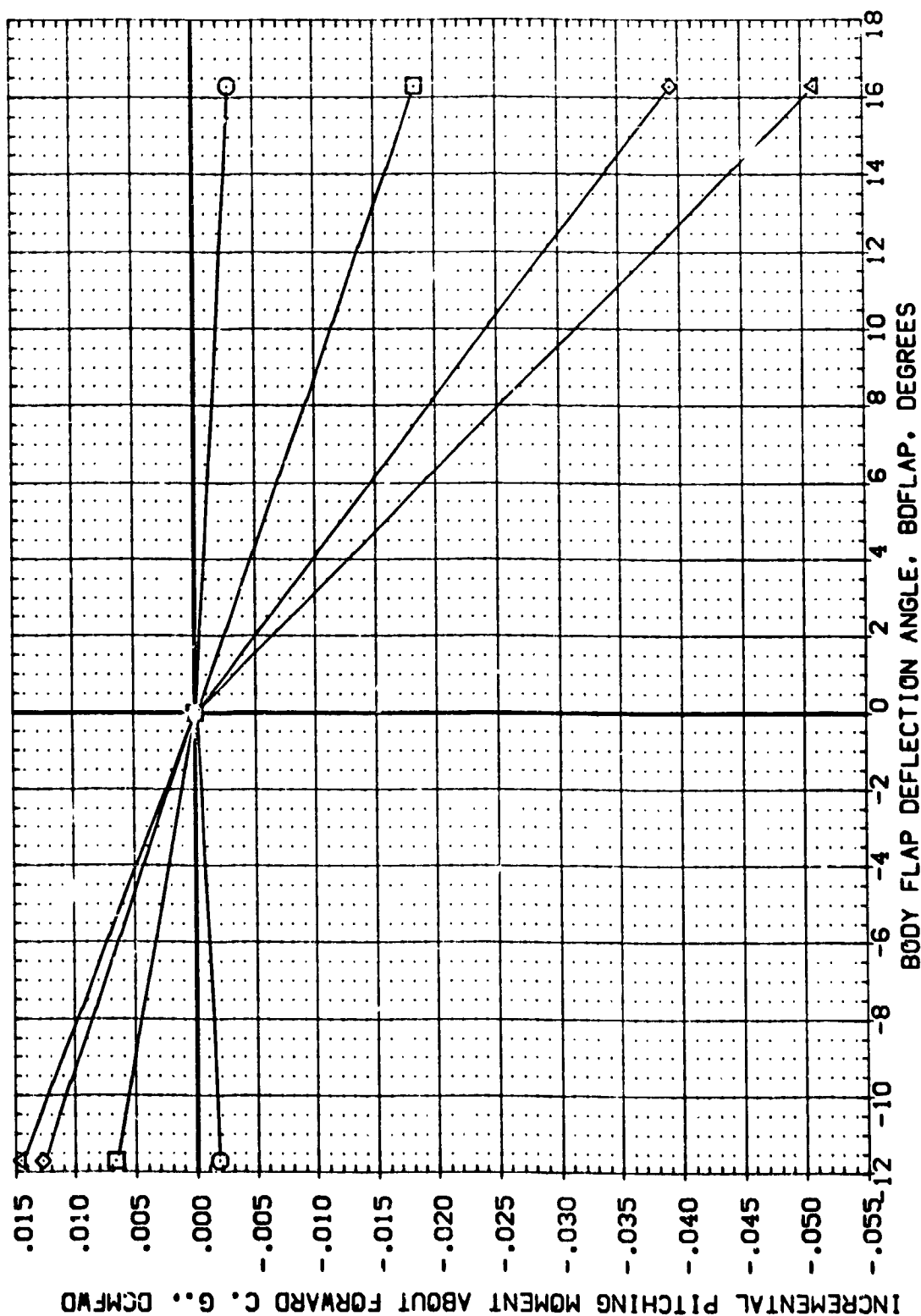


FIG. 11 BODYFLAP EFFECTIVENESS

AMES 3.5-176 OA87 140 A/B ORBITER (GEF008)

PARAMETRIC VALUES			DATA SOURCE		REFERENCE INFORMATION	
SYMBOL	ALPHA	MACH	BETA	ELEVON	SPDRK	RVL
○	10.000	7.320	.000	.000	.000	.000
□	20.000	.000	.000	.000	.000	.000
◇	30.000	.000	.000	.000	.000	.000
△	40.000	3.000	.000	.000	.000	.000
			BOFLAP		SQ.FT.	
			BOFLAP		LREF	
			BOFLAP		BREF	
			BOFLAP		XREF	
			BOFLAP		YREF	
			BOFLAP		ZREF	
			BOFLAP		SCALE	
			BOFLAP		SCALE	

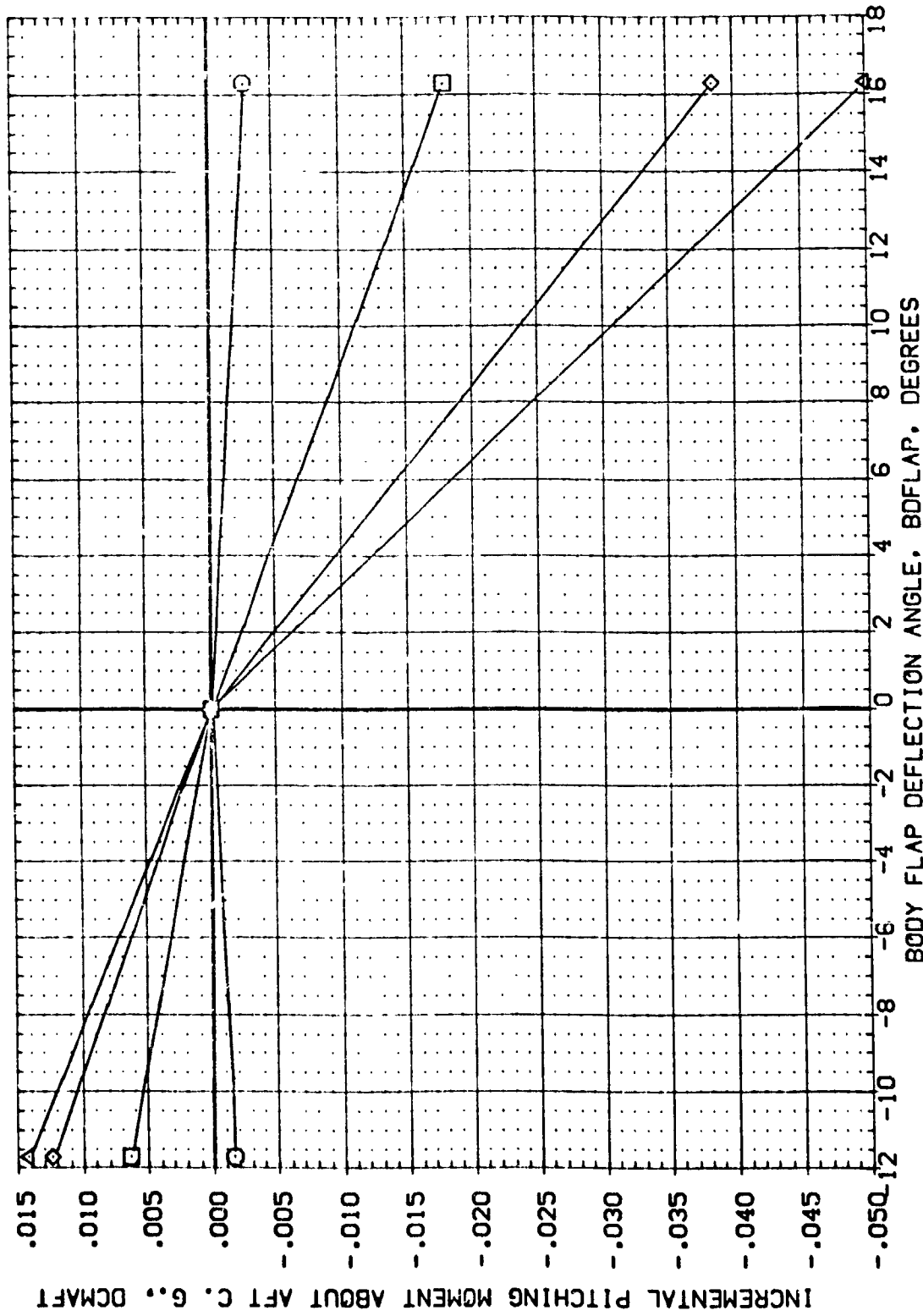


FIG. 11 BODYFLAP EFFECTIVENESS

DATA SET SYMBOL (EEF019) ○ ARES 3.5-176 CAB7 140 A/B ORBITER

AILRON ELEVON BOFLAP RNVL

5.000 -11.700 10.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.

LREF 1290.3000 IN.

BREF 936.6800 IN.

XMRP 1076.4800 IN.

YMRP .0000 IN.

ZMRP 375.0000 IN.

SCALE .0150 SCALE

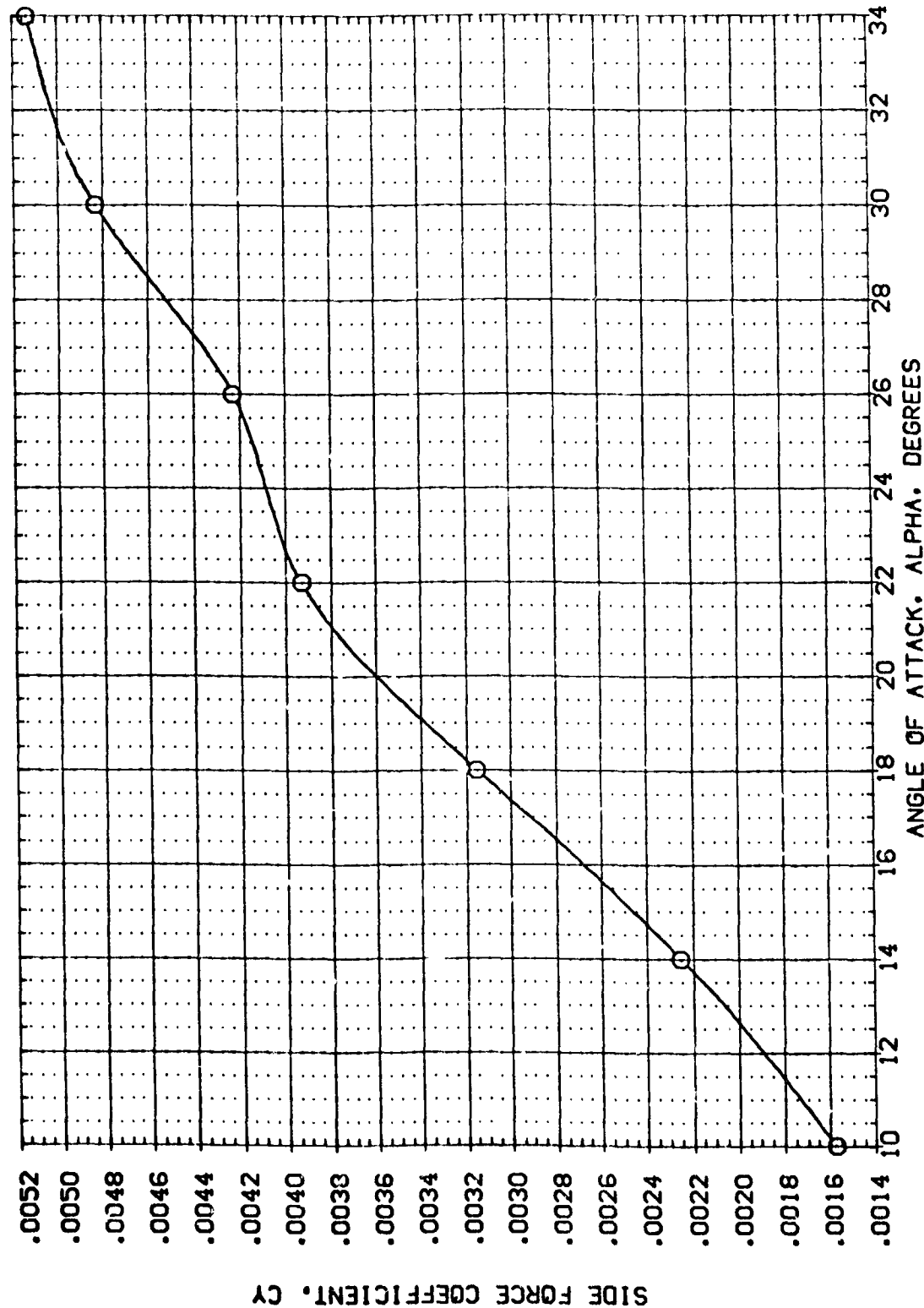


FIG. 12 AILERON EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL: (EEF019) ○ ARES 3.5-176 QAB7 140 A/B ORBITER

CONFIGURATION DESCRIPTION: 140 A/B ORBITER

AILERON ELEVON BOFLAP RN/L

5.000 -11.700 10.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.

LREF 1290.3003 IN.

BREF 936.6800 IN.

XMPP 1076.4800 IN.

YMPP .0000 IN.

ZMPP 375.0000 IN.

SCALE .0150

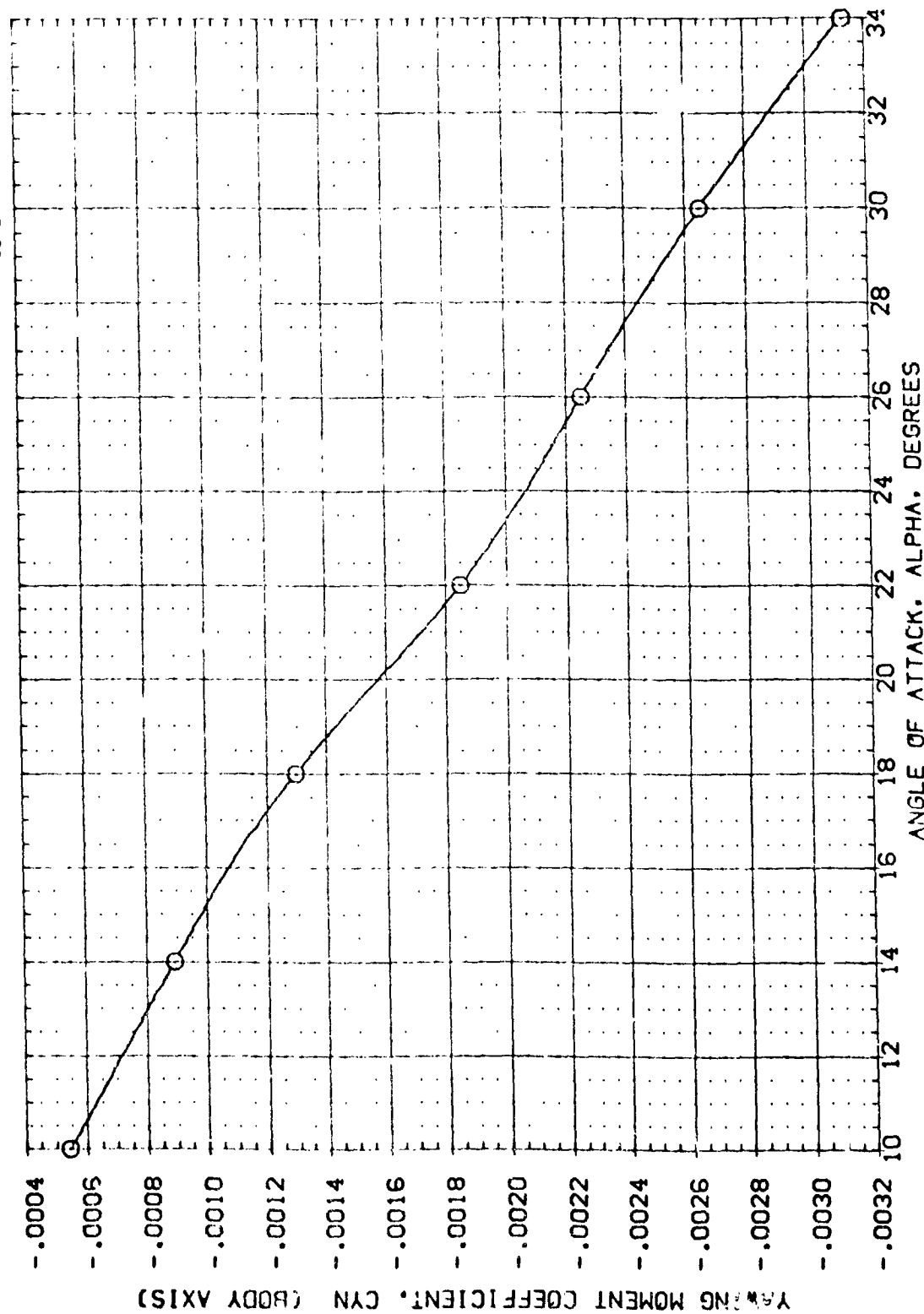


FIG. 12 AILERON EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILERON	ELEVON	BOFLAP	ANAL	REFERENCE INFORMATION	
(EEF019) ○	AVES 3.5-176 OA87 140 A/B ORBITER	5.000	-11.70	10.000		SREF	2690.0000 SQ.FT.
						LREF	1290.3000 IN.
						BREF	936.6800 IN.
						XMRP	1075.4800 IN.
						YMRP	.0000 IN.
						ZMRP	375.0000 IN.
						SCALE	.0150 SCALE

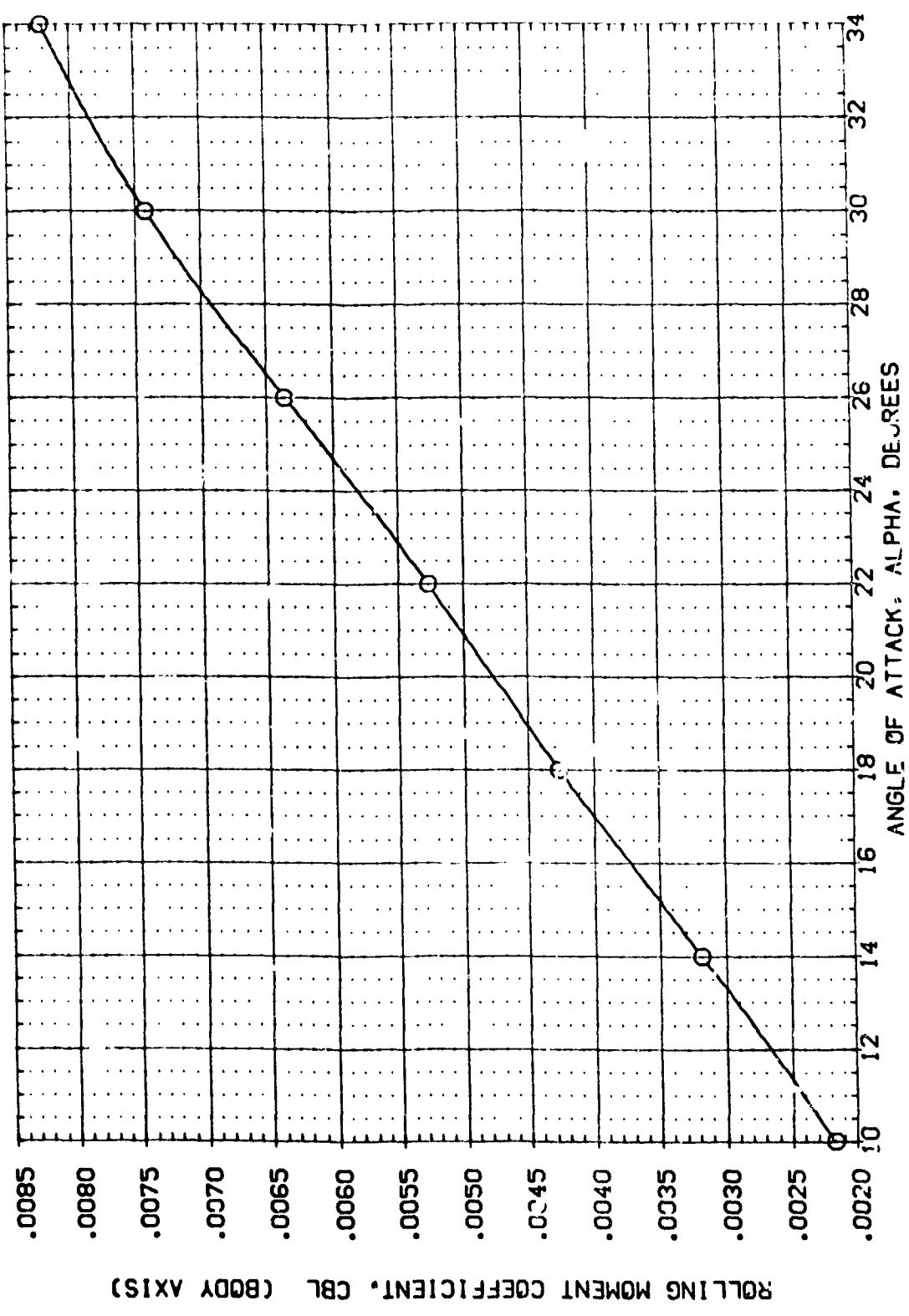


FIG. 12 AILERON EFFECTIVENESS

(M)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION	DESCRIPTION	ELEVATION	SPOILER	BOFLAP	RNVL	REFERENCE INFORMATION
(B5022)	AMES 3.5-175	140 A/B ORBITER	.000	55.000	.000	3.000	SREF 2690.0000 SQ.FT.
(B5023)	AMES 3.5-176	140 A/B ORBITER	.000	55.000	.000	1.300	LREF 1290.3000 IN.
(B5024)	DATA NOT AVAILABLE		.000	55.000	.000	10.000	BREF 936.6800 IN.
(B5025)	DATA NOT AVAILABLE		.000	55.000	.000	3.000	XMP3 1076.4800 IN.
(B5026)	DATA NOT AVAILABLE		.000	55.000	.000	1.300	YMP3 375.0000 IN.
(B5027)	DATA NOT AVAILABLE		.000	55.000	.000	.810	ZMP3 375.0000 IN.
(B5028)	DATA NOT AVAILABLE		.000	55.000	.000	.0150	SCALE

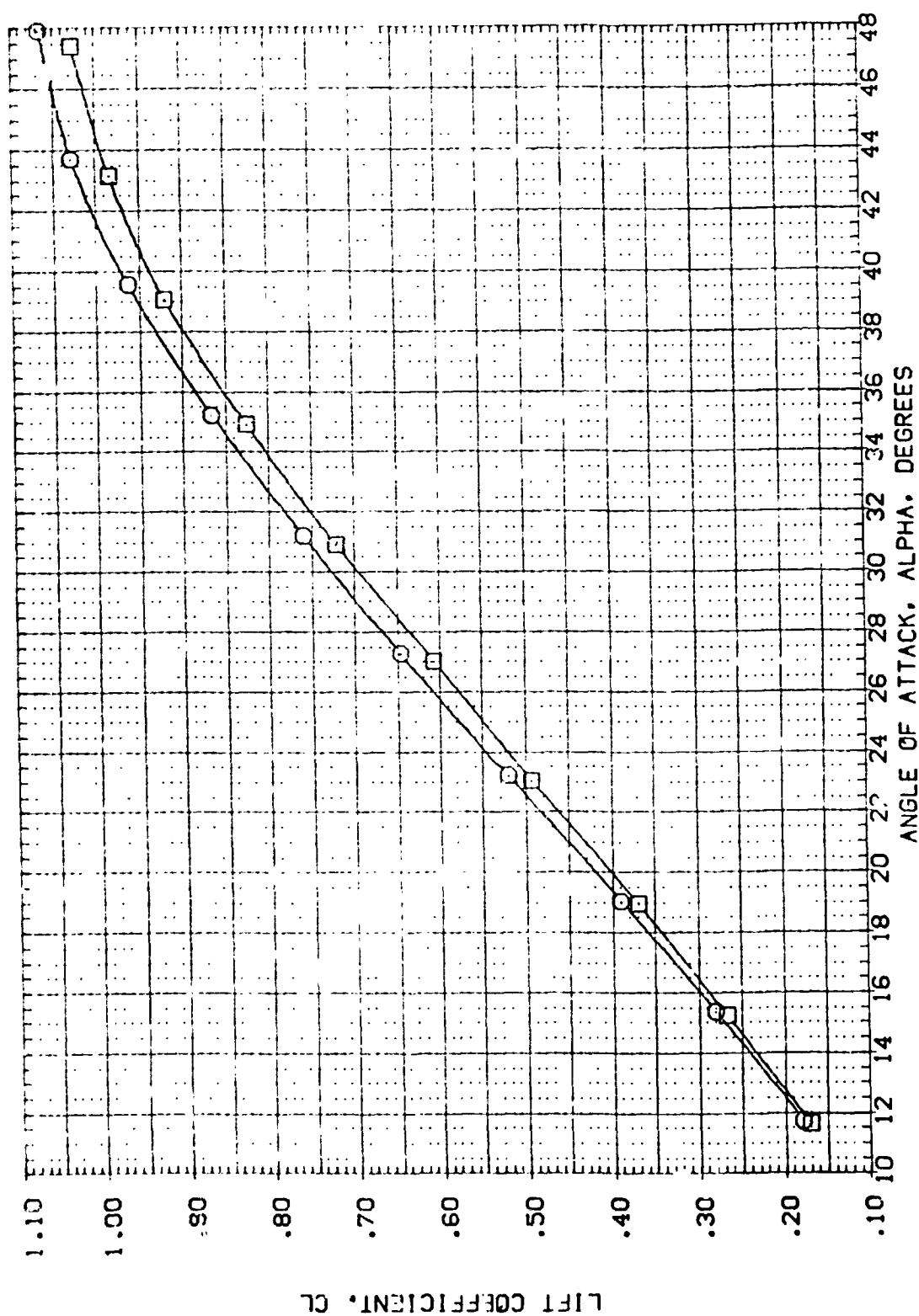


FIG. 13 REYNOLDS NUMBER EFFECTS - NO DEFLECTIONS

(M)MACH = 5.26

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORRK	BOFLAP	RNVL	REFERENCE INFORMATION
(BEFO22)	□	DATA NOT AVAILABLE	.000	55.000	.000	3.000	SREF 2690.0000 SQ.FT.
(BEFO23)	□	DATA NOT AVAILABLE	.000	55.000	.000	1.300	LREF 1290.3000 IN.
(BEFO01)	△	AVES 3.5-176 OAB7	.000	55.000	.000	10.000	BREF 936.6800 IN.
(BEFO07)	△	AVES 3.5-176 OAB7	.000	55.000	.000	3.000	XMRP 1076.4800 IN.
(BEFO24)	△	AVES 3.5-176 OAB7	.000	55.000	.000	1.300	YMRP .0000 IN.
(BEFO25)	△	AVES 3.5-176 OAB7	.000	55.000	.000	.810	ZMRP .0150 IN.
							SCALE

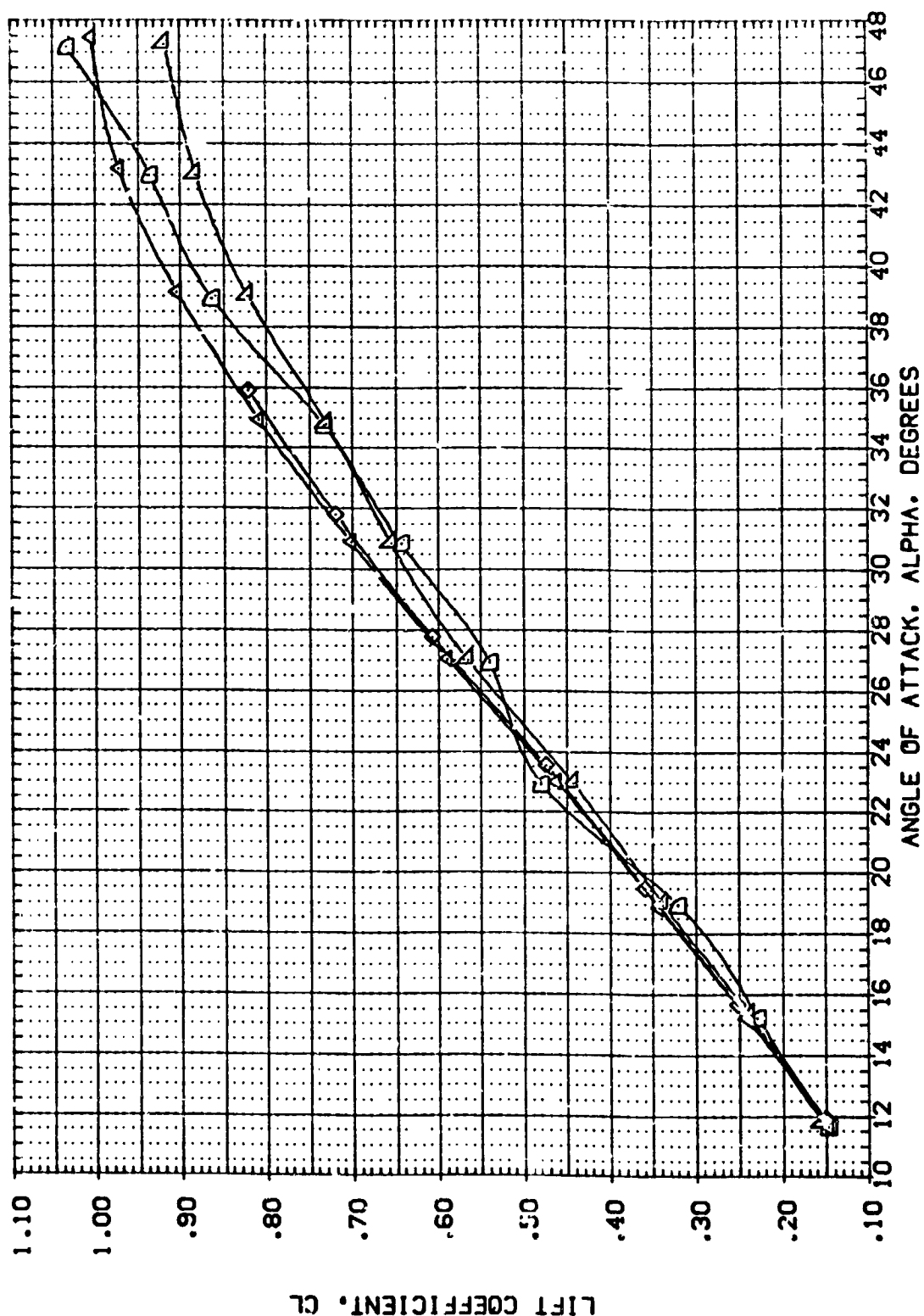


FIG. 13 REYNOLDS NUMBER EFFECTS - NO DEFLECTIONS

(B)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF022)	AKES 3-5-176 CAB7 140 A/B ORBITER	.000	55.000	.000	3.000	SREF 2690.0000 SO.FT.
(BEF023)	AKES 3-5-176 CAB7 140 A/B ORBITER	.000	55.000	.000	1.300	LREF 1290.3000 IN.
(BEF001)	DATA NOT AVAILABLE	.000	55.000	.000	0.000	BREF 936.6800 IN.
(BEF007)	DATA NOT AVAILABLE	.000	55.000	.000	1.300	XMRP 1076.4800 IN.
(BEF024)	DATA NOT AVAILABLE	.000	55.000	.000	1.300	YMRP .0000 IN.
(BEF025)	DATA NOT AVAILABLE	.000	55.000	.000	.810	ZMRP 375.0000 IN.
						SCALE .0150

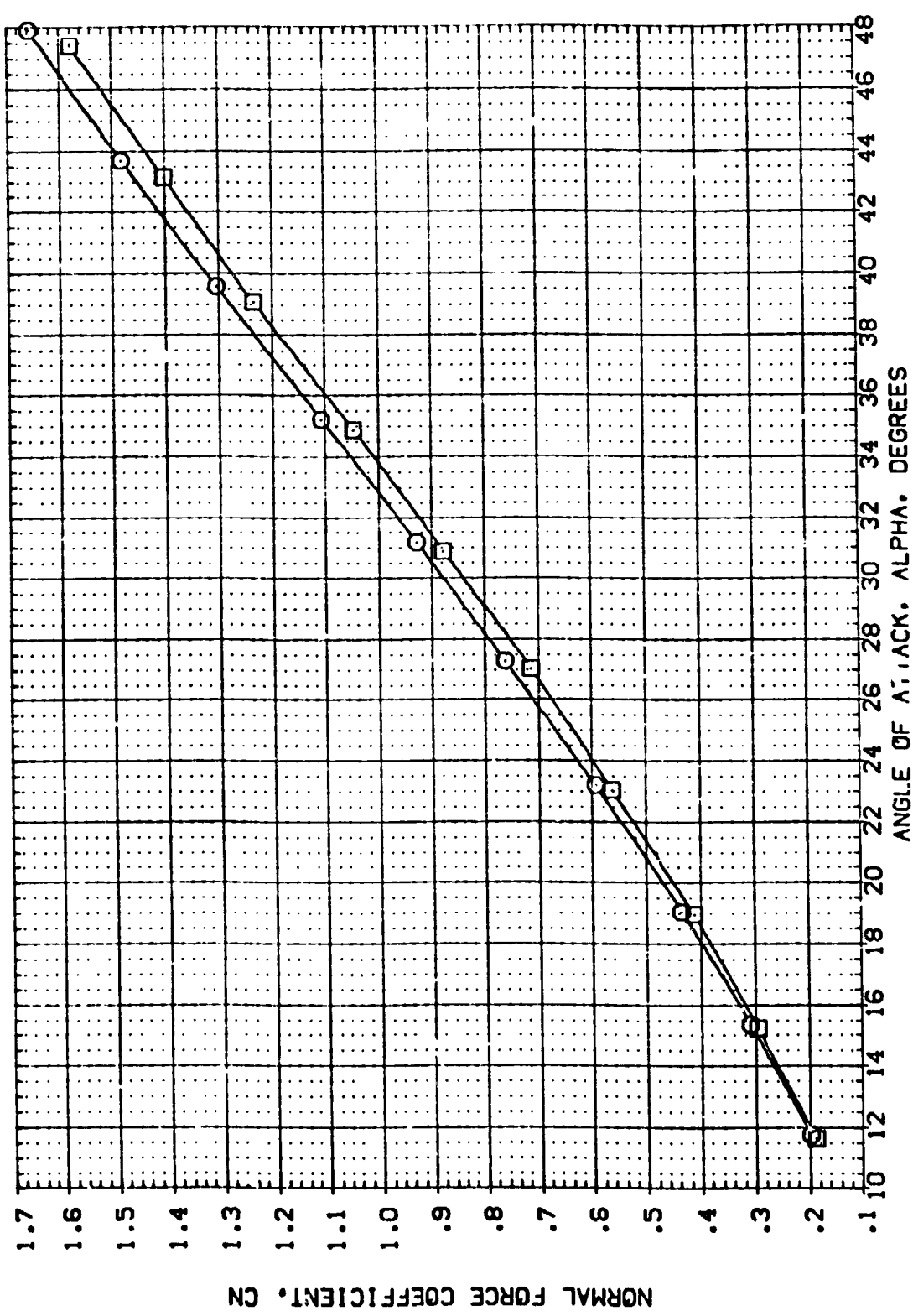


FIG. 13 REYNOLDS NUMBER EFFECTS - NO DEFLECTIONS

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORRK	BOFLAP	RAVL	REFERENCE INFORMATION
(BEF022)	DATA NOT AVAILABLE	.000	55.000	.000	3.000	SREF 2690.0000 50.17.
(BEF023)	DATA NOT AVAILABLE	.000	55.000	.000	1.300	LREF 1290.3000 IN.
(BEF007)	AMES 3.5-176 DAB7	.000	55.000	.000	10.000	BREF 936.6800 IN.
(BEF024)	AMES 3.5-176 DAB7	.000	55.000	.000	3.000	XMRP 1076.4800 IN.
(BEF025)	AMES 3.5-176 DAB7	.000	55.000	.000	1.810	ZMRP 375.0000 IN.
						SCALE .0150

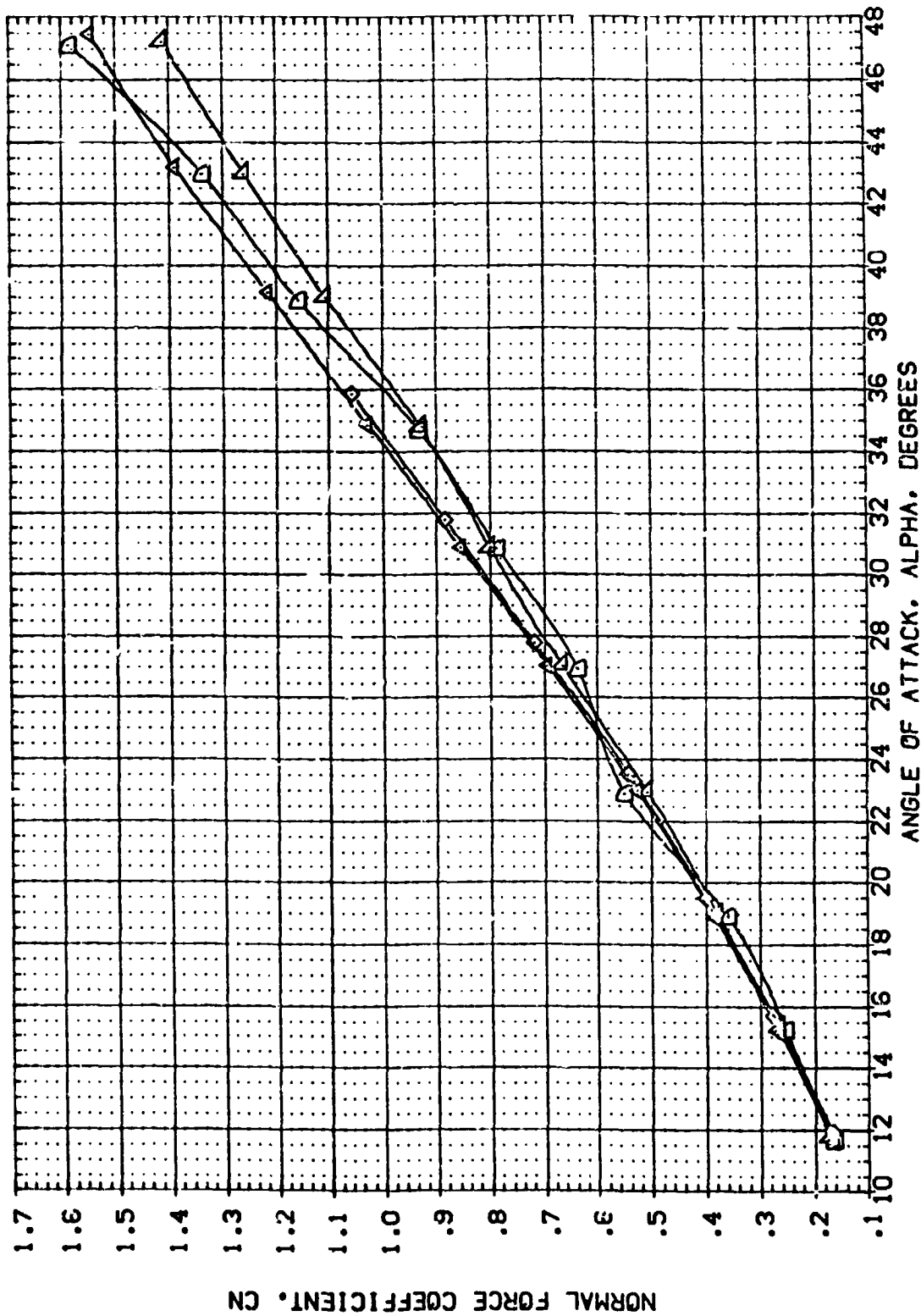
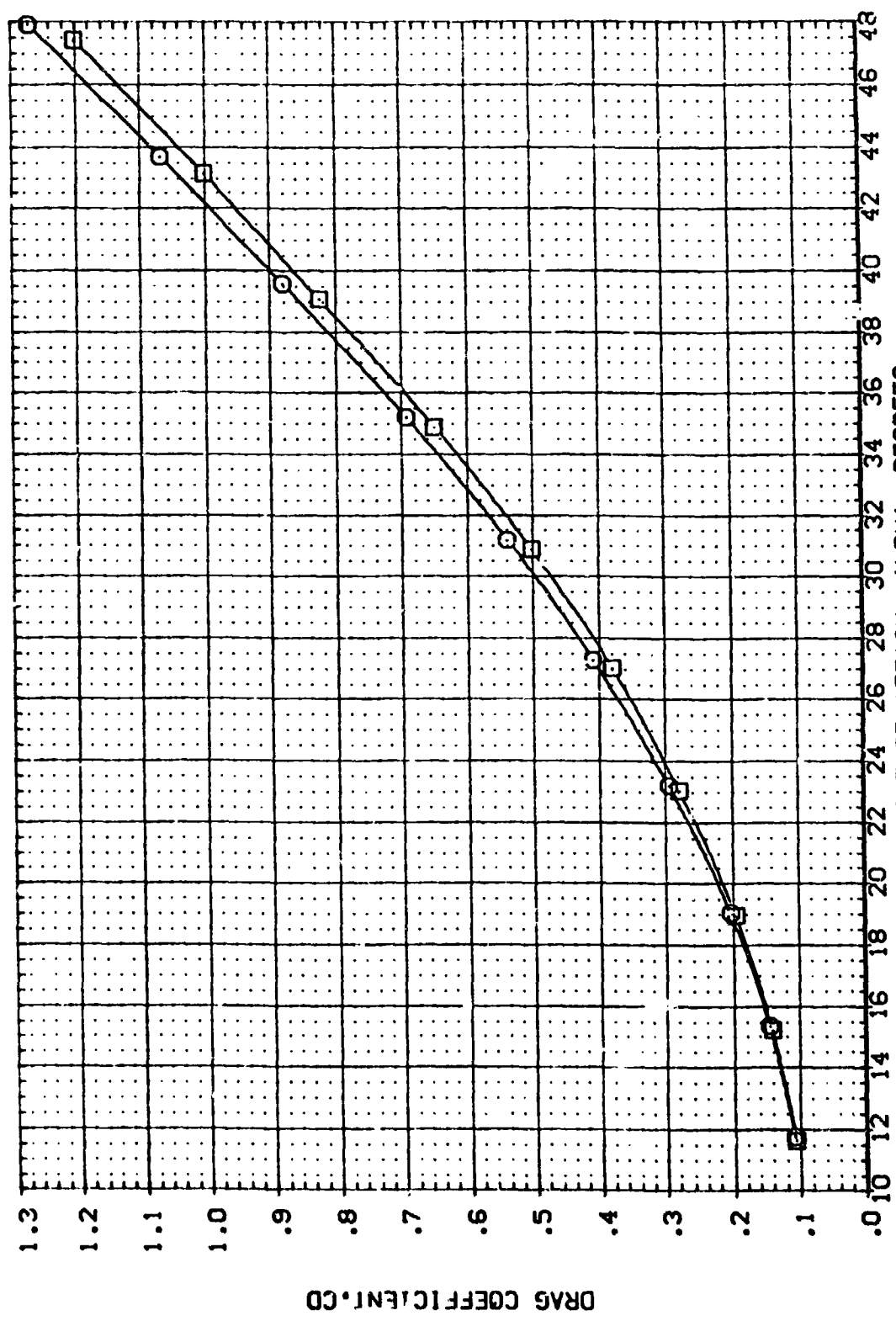


FIG. 13 REYNOLDS NUMBER EFFECTS - NO DEFLECTIONS

(B)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	RVAL	REFERENCE INFORMATION
(BEF022)	AVES 3.5-176 QAB7 140 A/B ORBITER	.000	3.000	SREF 2690.0000 SQ.FT.
(BEF023)	AVES 3.5-176 QAB7 140 A/B ORBITER	.000	1.300	LREF 1290.3000 IN.
(BEF001)	DATA NOT AVAILABLE	.000	10.000	SREF 936.6800 IN.
(BEF007)	DATA NOT AVAILABLE	.000	3.000	XMRP 1076.4800 IN.
(BEF024)	DATA NOT AVAILABLE	.000	1.300	YMRP .0000 IN.
(BEF025)	DATA NOT AVAILABLE	.000	.810	ZMRP 375.0000 IN.
				SCALE .0150



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 13 REYNOLDS NUMBER EFFECTS - NO DEFLECTIONS

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORCK	BOFLAP	RVAL	REFERENCE INFORMATION
(BEF022)	DATA NOT AVAILABLE	.000	55.000	.000	3.000	SREF 2690.0000 SQ.FT.
(BEF023)	DATA NOT AVAILABLE	.000	55.000	.000	1.300	LREF 1290.3000 IN.
(BEF001)	AVES 3.5-176 CA87	.000	55.000	.000	10.000	BREF 936.6800 IN.
(BEF007)	AVES 3.5-176 CA87	.000	55.000	.000	3.000	XMRP 1076.4800 IN.
(BEF024)	AVES 3.5-176 CA87	.000	55.000	.007	1.300	YMRP .0000 IN.
(BEF025)	AVES 3.5-176 CA87	.000	55.000	.000	.810	ZMRP 375.0000 IN.
					SCALE	.0150 SCALE

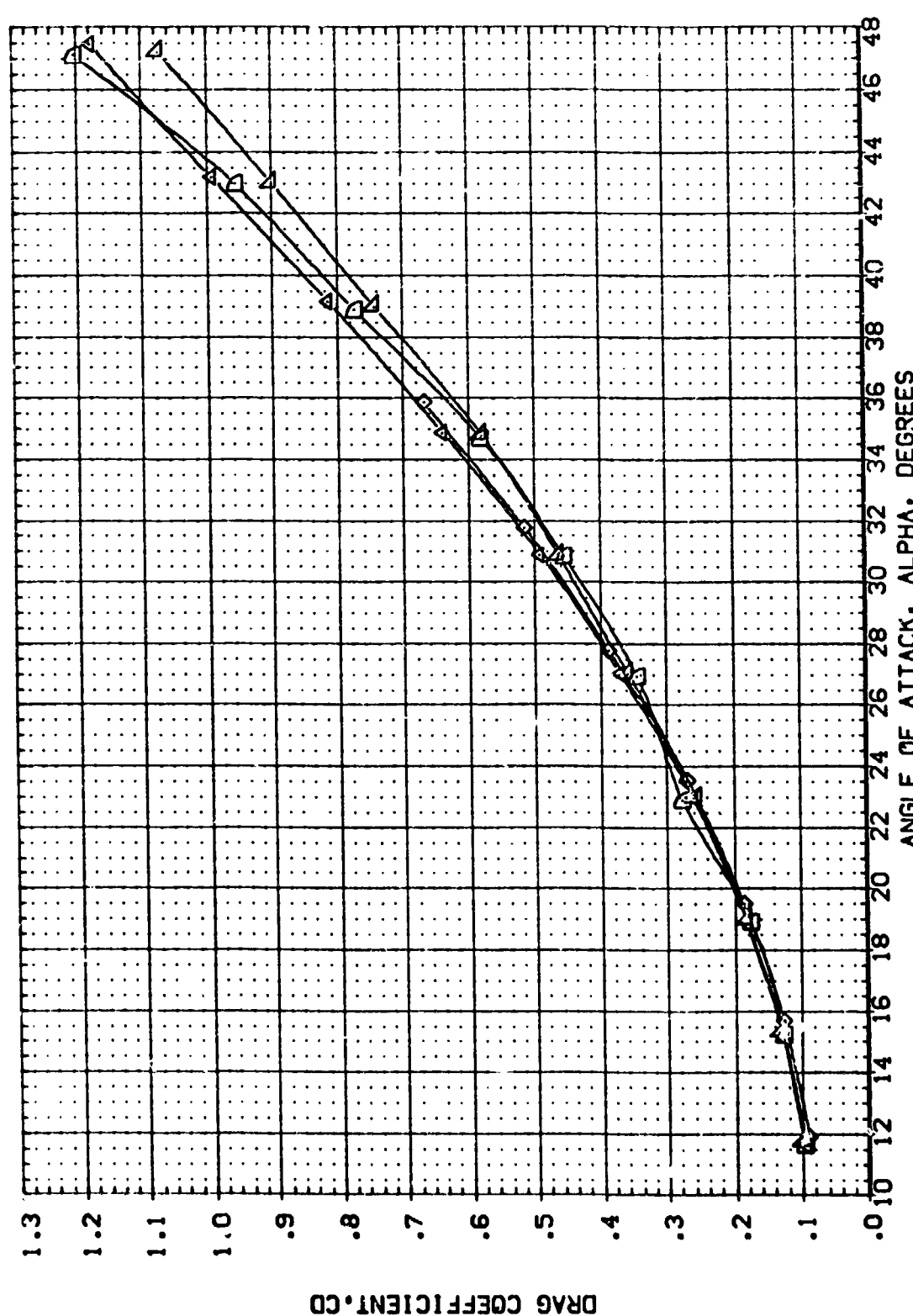


FIG. 13 REYNOLDS NUMBER EFFECTS - NO DEFLECTIONS
(B)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORRK	BOFLAP	R/V/L	REFERENCE INFORMATION
(BEF022)	AMES 3.5-176 DAB7 140 A/B ORBITTER	.000	55.000	.000	3.000	SREF 2690.0000 50. FT.
(BEF023)	AMES 3.5-176 DAB7 140 A/B ORBITTER	.000	55.000	.000	1.300	LREF 1290.3000 IN.
(BEF001)	DATA NOT AVAILABLE	.000	55.000	.000	10.000	BREF 536.6800 IN.
(BEF007)	DATA NOT AVAILABLE	.000	55.000	.000	3.000	XMRP 1076.4800 IN.
(BEF024)	DATA NOT AVAILABLE	.000	55.000	.000	1.300	YMRP .0000 IN.
(BEF025)	DATA NOT AVAILABLE	.000	55.000	.000	.810	ZMRP 375.0000 IN.
					SCALE	SCALE .0150

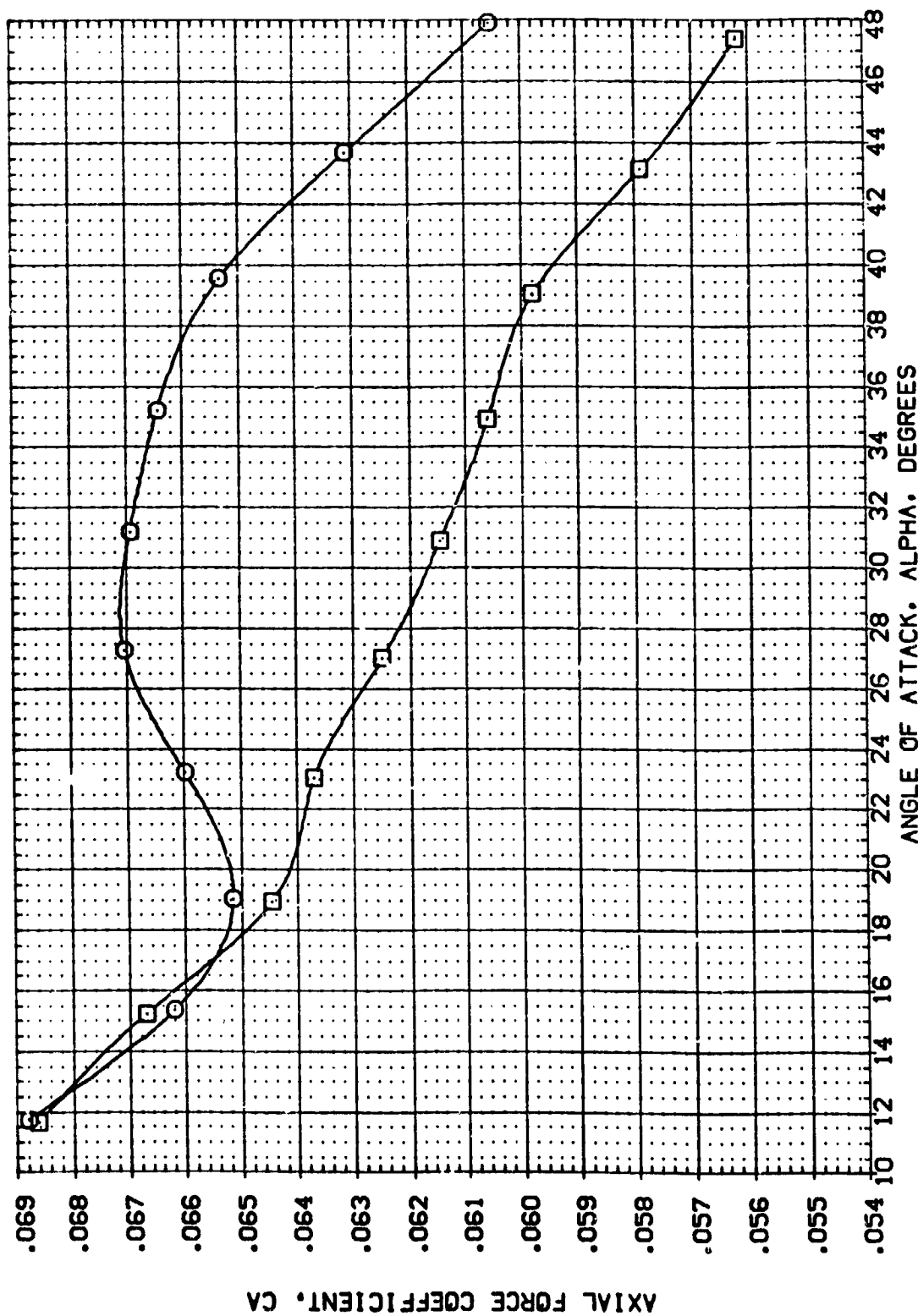


FIG. 13 REYNOLDS NUMBER EFFECTS - NO DEFLECTIONS

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BD/FLAP	RN/L	REFERENCE INFORMATION
(BEF022)	DATA NOT AVAILABLE	.000	55.000	.000	3.000	SREF 2690.0000 IN.
(BEF023)	DATA NOT AVAILABLE	.000	55.000	.000	1.300	LREF 1290.3000 IN.
(BEF001)	AVES 3.5-176 OAB7 140 A/B ORB/ITER	.000	55.000	.000	10.000	BREF 936.6800 IN.
(BEF007)	AVES 3.5-176 OAB7 140 A/B ORB/ITER	.000	55.000	.000	3.000	XMRP 1076.4800 IN.
(BEF024)	AVES 3.5-176 OAB7 140 A/B ORB/ITER	.000	55.000	.000	1.300	YMRP .0000 IN.
(BEF025)	AVES 3.5-176 OAB7 140 A/B ORB/ITER	.000	55.000	.000	.810	ZMRP 375.0000 IN.
					SCALE	SCALE .0150

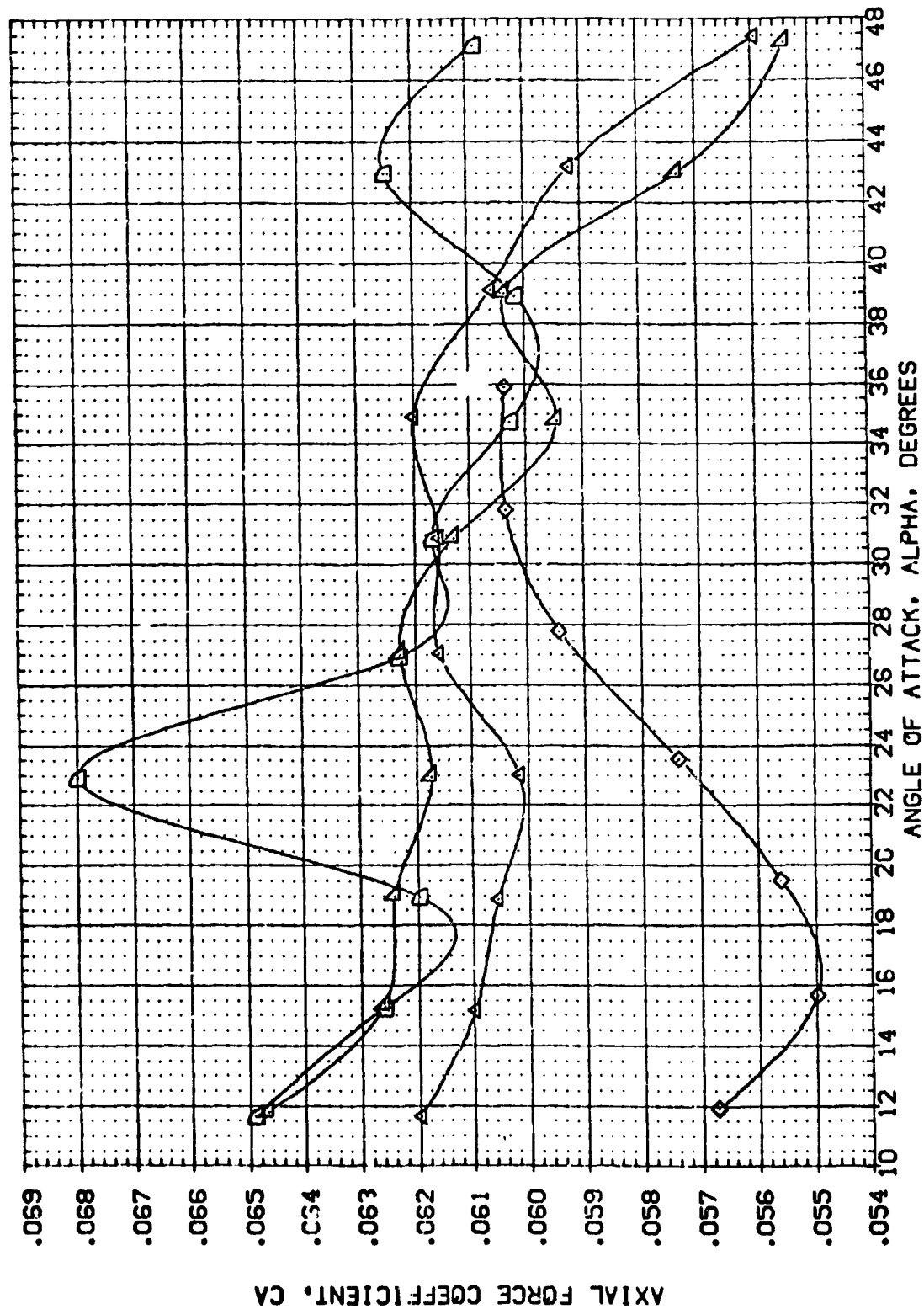


FIG. 13 REYNOLDS NUMBER EFFECTS - NO DEFLECTIONS

(B)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BOFLAP	RNVL	REFERENCE INFORMATION
(BEF022)	AMES 3.5-176 CAG7 140 A/B CRBITER	.000	55.000	.000	3.000	SREF 2680.0000 SO.FT.
(BEF023)	AMES 3.5-176 CAG7 140 A/B CRBITER	.000	55.000	.000	1.300	LREF 1290.3000 IN.
(BEF001)	DATA NOT AVAILABLE	.000	55.000	.000	10.000	SRFP 936.6800 IN.
(BEF007)	DATA NOT AVAILABLE	.000	55.000	.000	3.000	AMRP 1076.4800 IN.
(BEF024)	DATA NOT AVAILABLE	.000	55.000	.000	1.300	ZMRP .0000 IN.
(BEF025)	DATA NOT AVAILABLE	.000	55.000	.000	.810	SCALE .0150

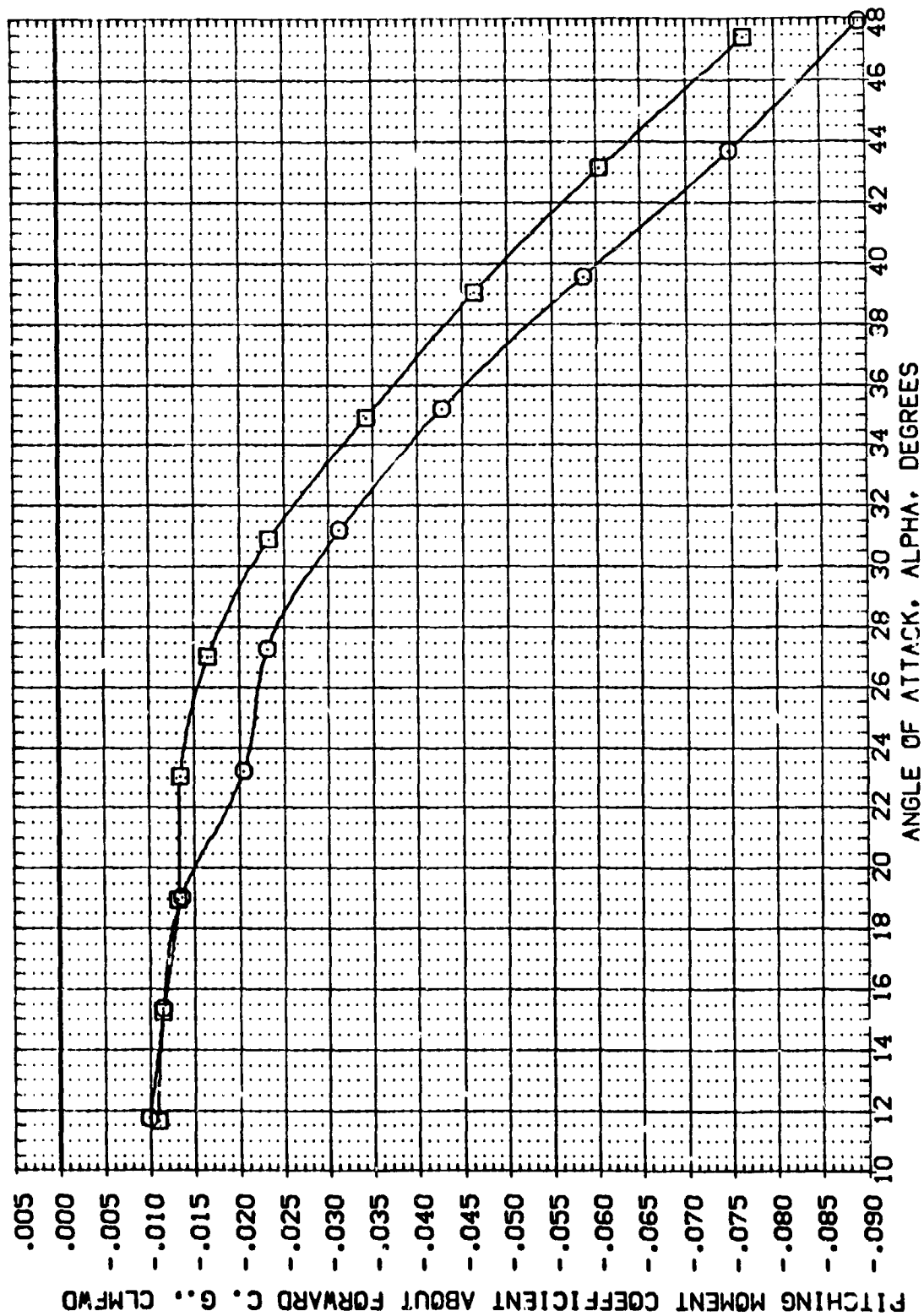


FIG. 13 REYNOLDS NUMBER EFFECTS - NO DEFLECTIONS

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RVAL	REFERENCE INFORMATION
(BEFO22)	DATA NOT AVAILABLE	.000	55.000	.000	3.000	SREF 2690.0000 SQ.FT.
(BEFO23)	DATA NOT AVAILABLE	.000	55.000	.000	1.300	LREF 1290.3000 IN.
(BEFO21)	AVES 3.5-176 CAB7	.000	55.000	.000	10.000	BREF 536.6800 IN.
(BEFO07)	AVES 3.5-176 CAB7	.000	55.000	.000	3.000	XMRP 1076.4800 IN.
(BEFO24)	AVES 3.5-176 CAB7	.000	55.000	.000	1.300	YMRP .0000 IN.
(BEFO25)	AVES 3.5-176 CAB7	.000	55.000	.000	.810	ZMRP .0000 IN.
					SCALE	.0150

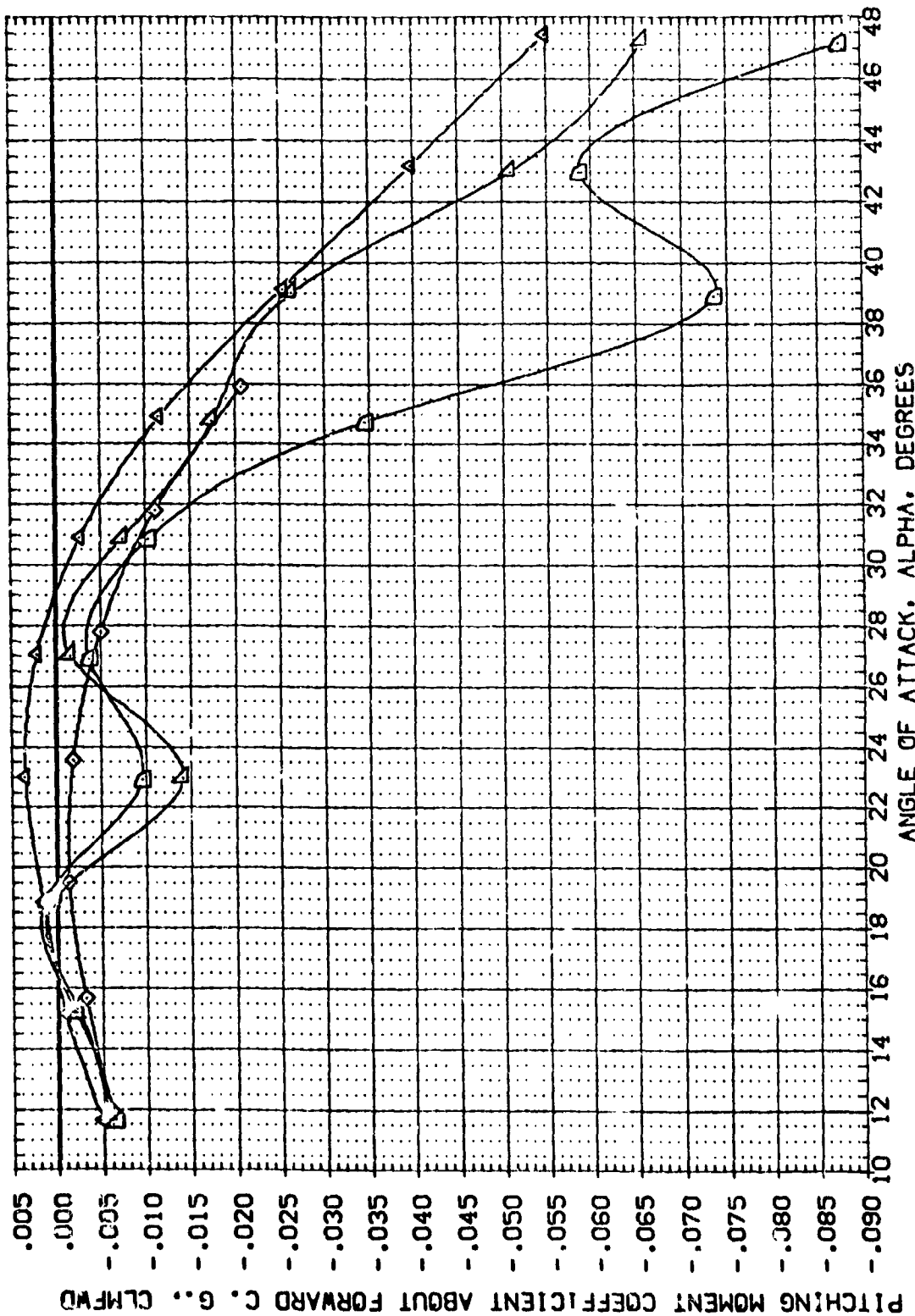


FIG. 13 REYNOLDS NUMBER EFFECTS - NO DEFLECTIONS

(B)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RVAL	REFERENCE INFORMATION
(BEF017)	AMES 3.5-176 DAB7 140 A/B ORBITTER	-40.000	55.000	-11.700	10.000	SREF 2690.0000 SQ.FT.
(BEF009)	AMES 3.5-176 DAB7 140 A/B ORBITTER	-40.000	55.000	-11.700	3.000	LREF 1290.3000 IN.
(BEF016)	AMES 3.5-176 DAB7 140 A/B ORBITTER	.000	55.000	-11.700	10.000	BREF 536.6800 IN.
(BEF008)	AMES 3.5-176 DAB7 140 A/B ORBITTER	.000	55.000	-11.700	3.000	XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

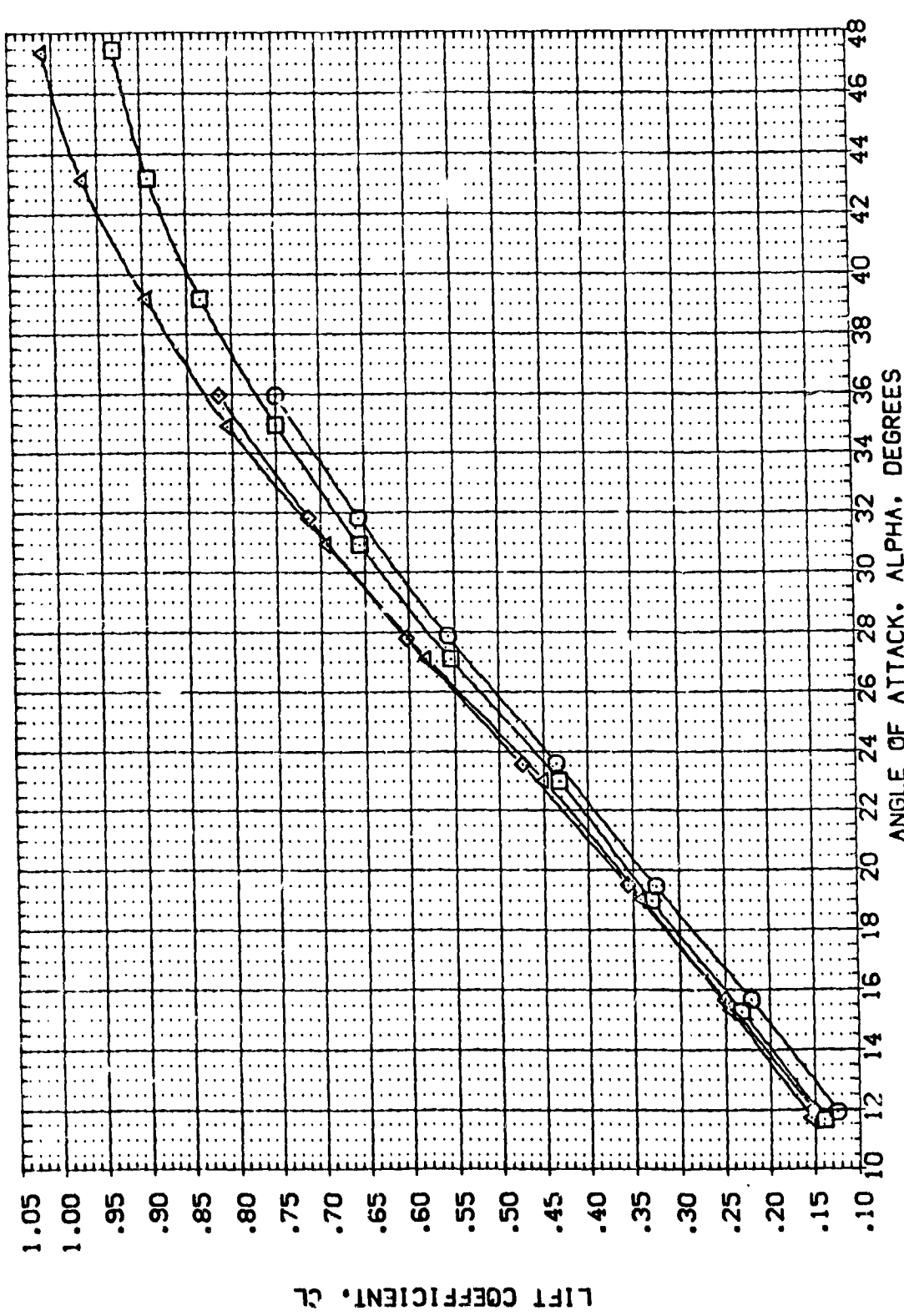


FIG. 14 REYNOLDS NUMBER EFFECTS, BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		REFERENCE INFORMATION	
(BEF017)	AMES 3.5-176	0A87	140 A/B	SREF	2690.0000
(BEF009)	AMES 3.5-176	0A87	140 A/B	LREF	1290.3000
(BEF016)	AMES 3.5-176	0A87	140 A/B	BREF	936.6800
(BEF008)	AMES 3.5-176	0A87	140 A/B	WREF	1076.4800
				WREF	0.0000
				WREF	375.0000
				SCALE	0.0150

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		REFERENCE INFORMATION	
(BEF017)	AMES 3.5-176	0A87	140 A/B	SREF	2690.0000
(BEF009)	AMES 3.5-176	0A87	140 A/B	LREF	1290.3000
(BEF016)	AMES 3.5-176	0A87	140 A/B	BREF	936.6800
(BEF008)	AMES 3.5-176	0A87	140 A/B	WREF	1076.4800
				WREF	0.0000
				WREF	375.0000
				SCALE	0.0150

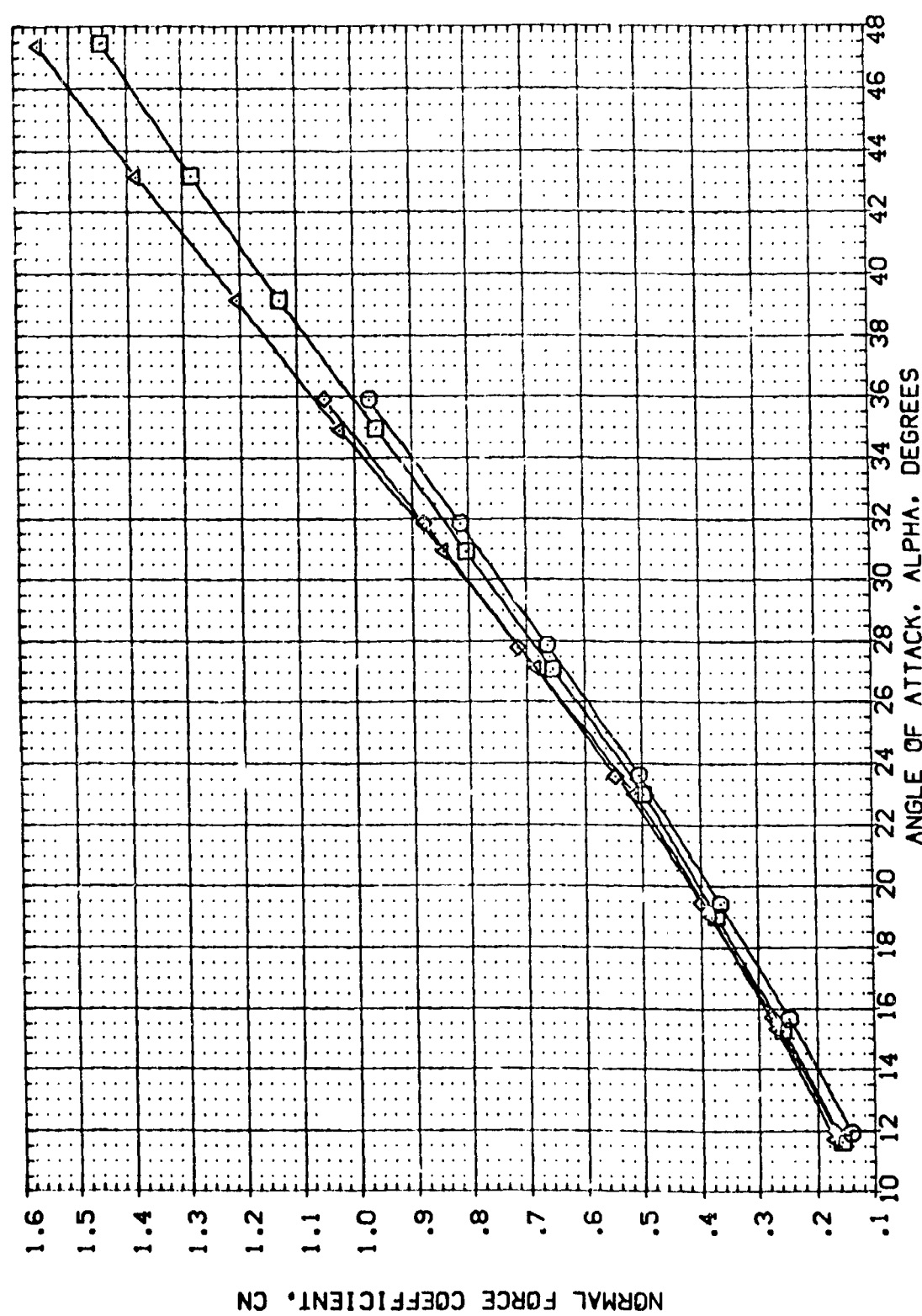


FIG. 14 REYNOLDS NUMBER EFFECTS, BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	S-DIRK	BDFLAP	RN/L	REFERENCE INFORMATION
(REF017)	AVES 3.5-176 DAB7 140 A/B DRBITER	-40.000	55.000	-11.700	10.000	SREF 2690.0000 SQ.FT.
(BEF009)	AVES 3.5-176 DAB7 140 A/B DRBITER	-40.000	55.000	-11.700	3.000	LREF 1290.3000 IN.
(BEF016)	AVES 3.5-176 DAB7 140 A/B DRBITER	.000	55.000	-11.700	10.000	BREF 936.6800 IN.
(BEF003)	AVES 3.5-176 DAB7 140 A/B DRBITER	.000	55.000	-11.700	3.000	XREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

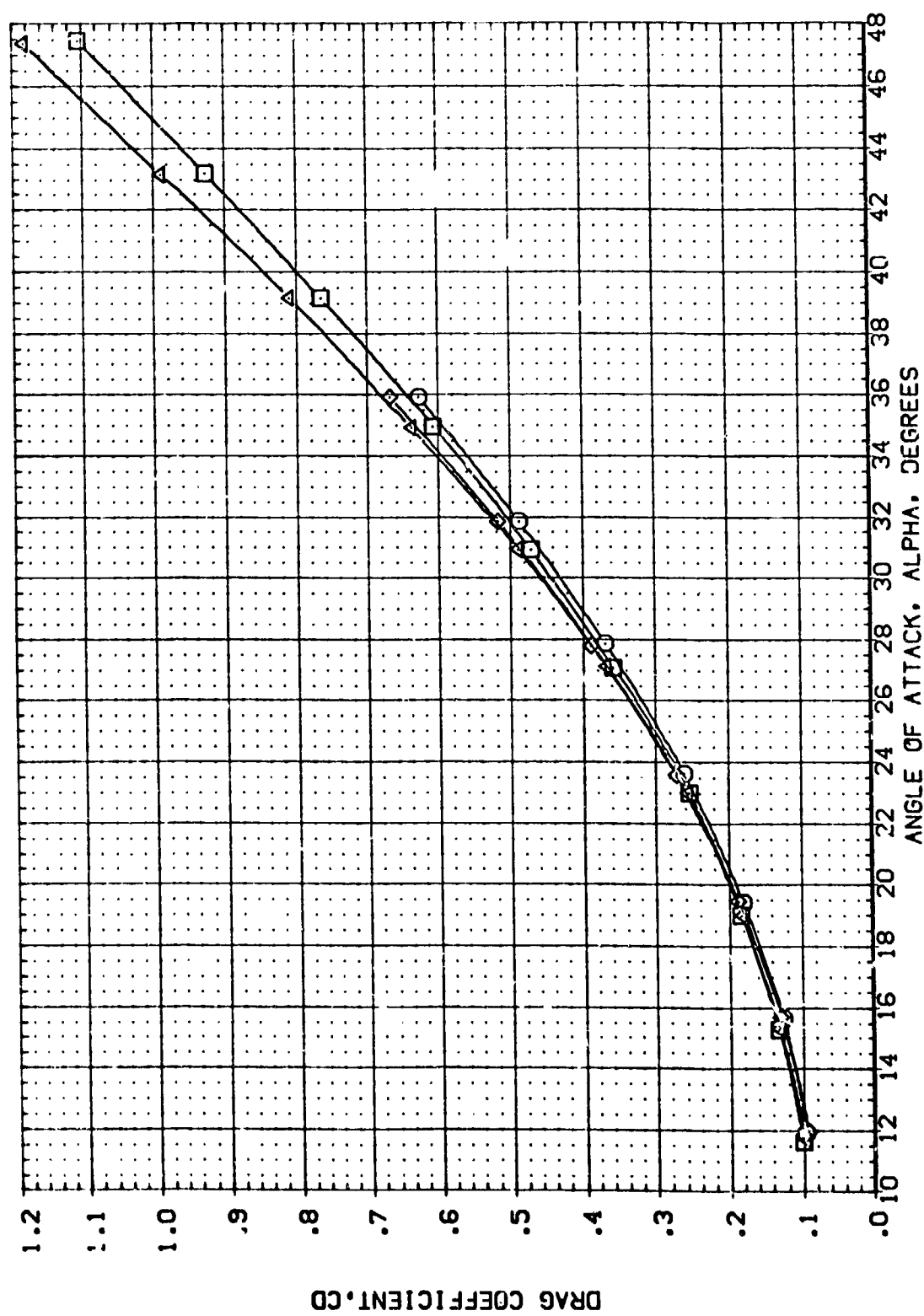


FIG. 14 REYNOLDS NUMBER EFFECTS, BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RNVL	REFERENCE INFORMATION
(BEF017)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	-11.700	10.000	SREF 2690.0000 SQ.FT.
(BEF009)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	LREF 1290.3000 IN.
(BEF016)	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	-11.700	10.000	BREF 936.6800 IN.
(BEF008)	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	-11.700	3.000	XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150 SCALE

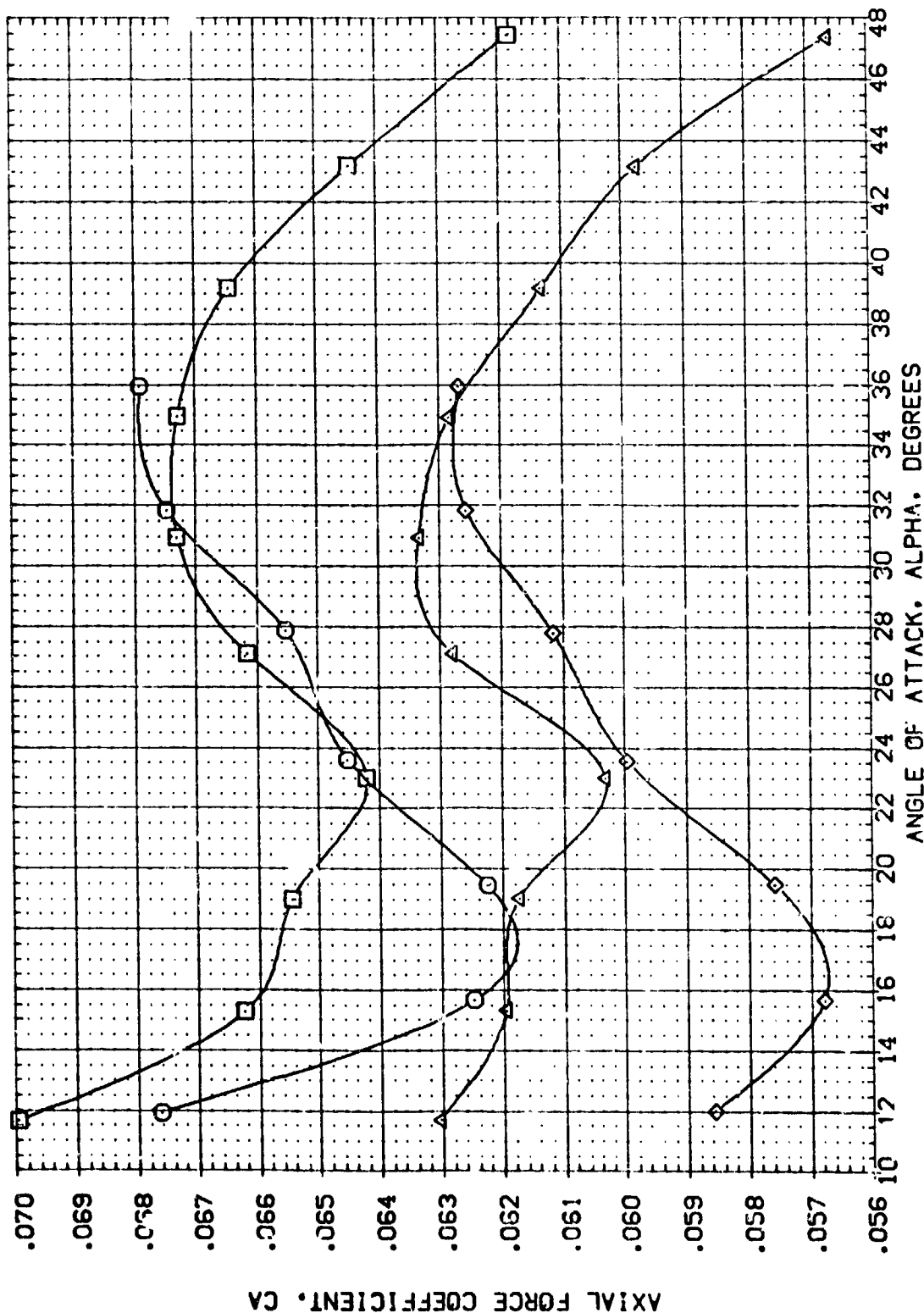


FIG. 14 REYNOLDS NUMBER EFFECTS, BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORWK	BOFLAP	INVL	REFERENCE INFORMATION
(BEF017)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	-11.700	10.000	SREF 2530.0000 SO.FT.
(BEF009)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	LREF 1250.3000 IN.
(BEF016)	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	-11.700	10.000	BREF 936.6800 IN.
(BEF008)	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	-11.700	3.000	XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

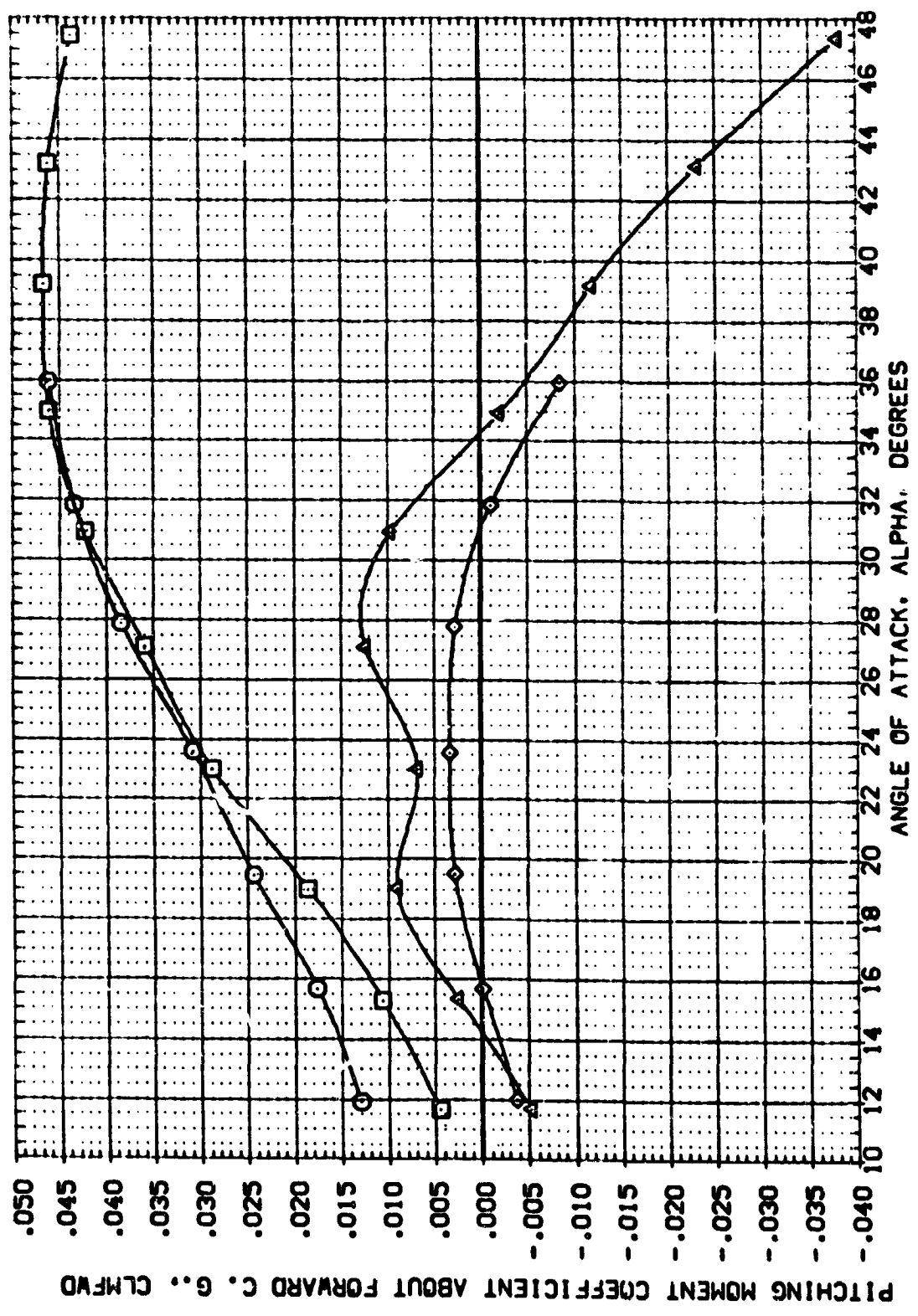


FIG. 14 REYNOLDS NUMBER EFFECTS, BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORON	BD FLAP	RAVL	REFERENCE INFORMATION
(REF001)	AVES 3.5-175 0467 140 A/B ORBITER	-10.000	55.000	.000	10.000	SHEET 2630.0000 50. FT.
(REF002)	AVES 3.5-175 0467 140 A/B ORBITER	-10.000	55.000	.000	10.000	UNIT 1750.3000 IN.
(REF003)	AVES 3.5-175 0467 140 A/B ORBITER	-10.000	55.000	.000	10.000	WEIGHT 538.6800 IN.
(REF004)	AVES 3.5-175 0467 140 A/B ORBITER	-10.000	55.000	.000	10.000	WING 1076.4800 IN.
(REF005)	AVES 3.5-175 0467 140 A/B ORBITER	-10.000	55.000	.000	10.000	WING 375.0000 IN.
(REF006)	AVES 3.5-175 0467 140 A/B ORBITER	-10.000	55.000	.000	10.000	SCALE 0.150 SCALE

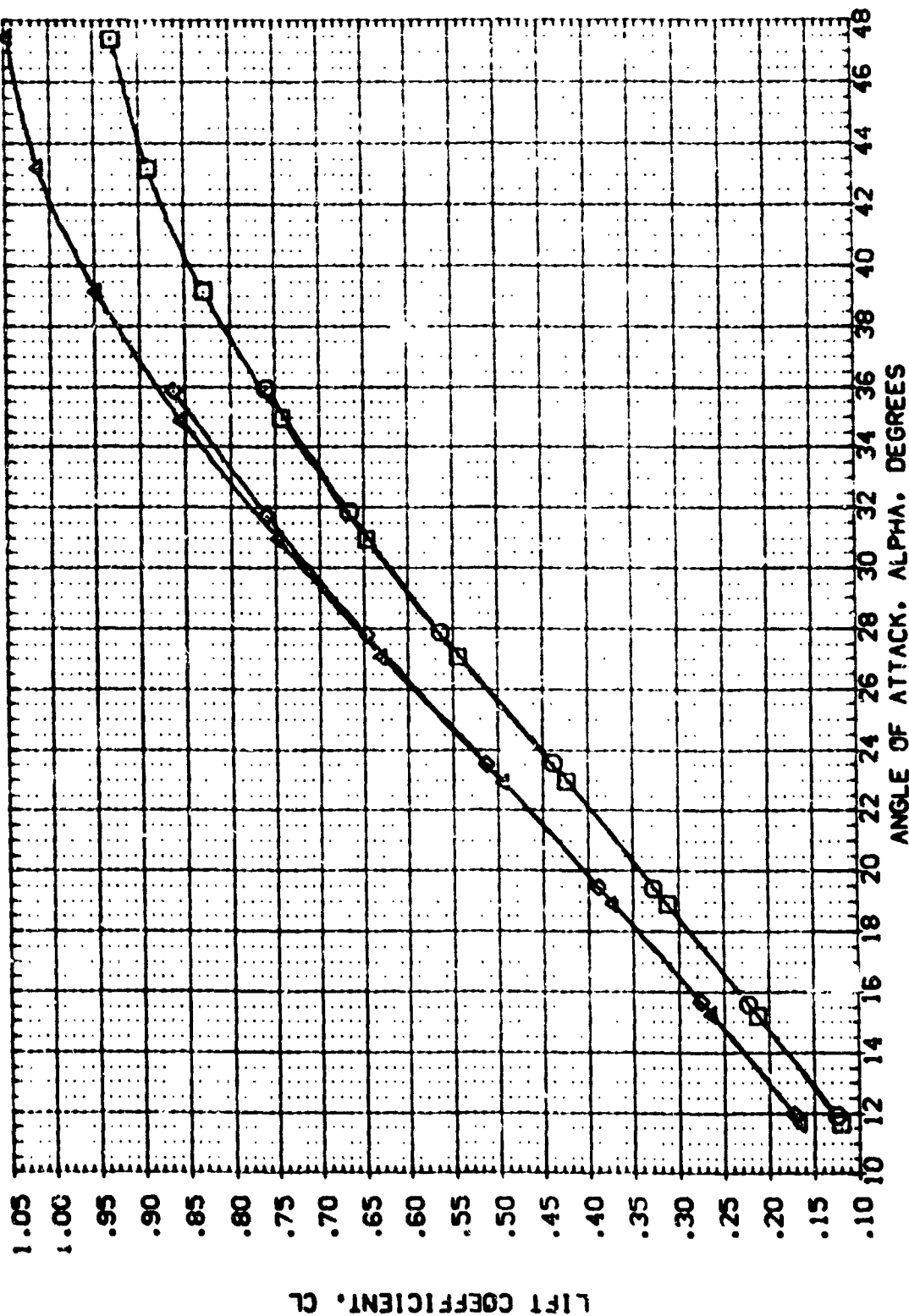


FIG. 15 REYNOLDS NUMBER EFFECTS. BD FLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOON	BOFLAP	RVAL	REFERENCE INFORMATION
(BEF004)	AVES 3.5-176 CAB7 140 A/B CRB7TER	-40.000	55.000	.000	10.000	REF 2650.0000 50.00
(BEF005)	AVES 3.5-176 CAB7 140 A/B CRB7TER	-40.000	55.000	.000	3.000	REF 1250.3000 10.00
(BEF003)	AVES 3.5-176 CAB7 140 A/B CRB7TER	10.000	55.000	.000	10.000	REF 925.6800 10.00
(BEF006)	AVES 3.5-176 CAB7 140 A/B CRB7TER	10.000	55.000	.000	3.000	REF 1076.4800 10.00
						REF 375.0000 10.00
						REF 375.0000 10.00
						SCALE 0.150

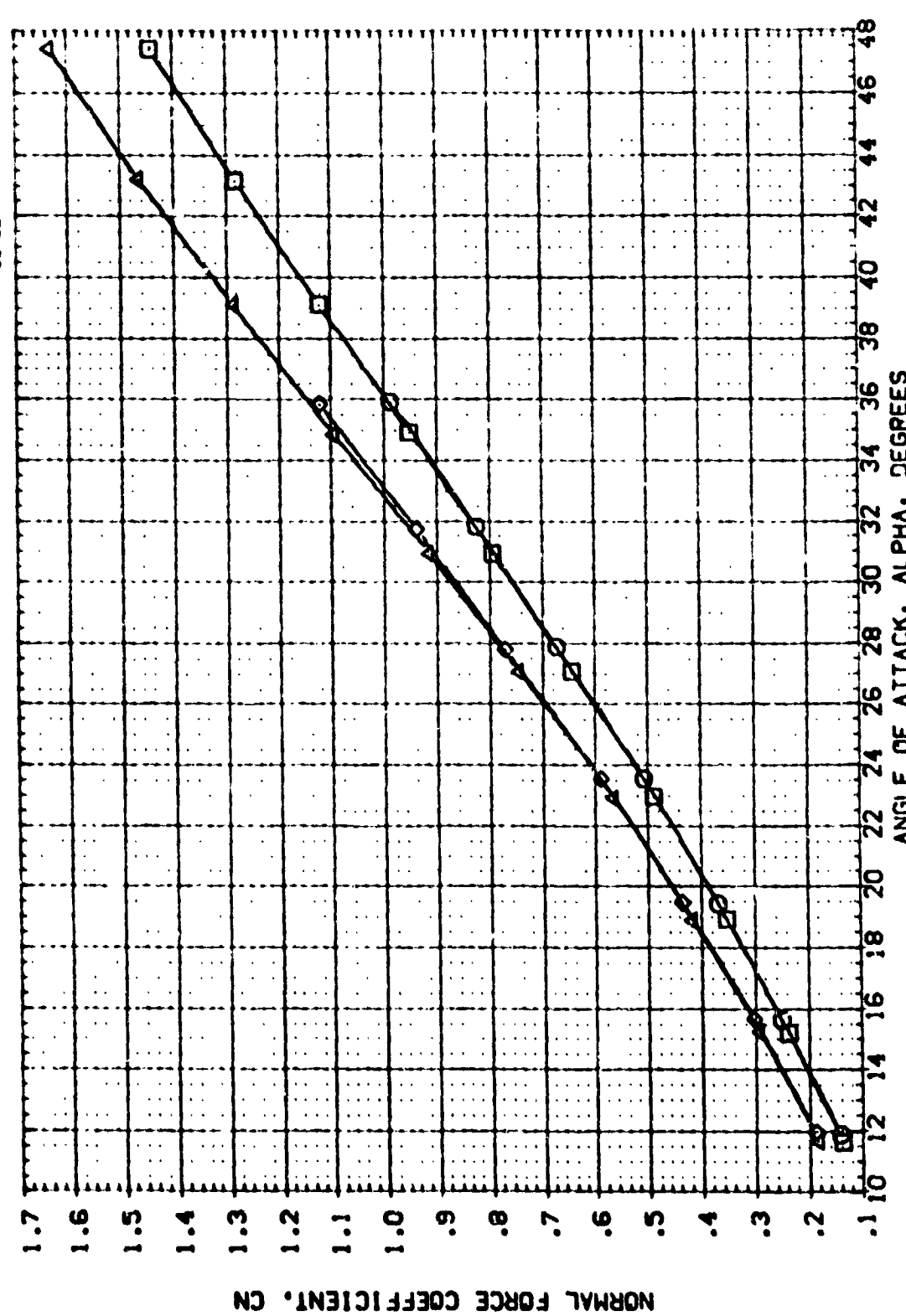


FIG. 15 REYNOLDS NUMBER EFFECTS, BOFLAP=0.0
(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOONK	BOFLAP	RAVL	REFERENCE INFORMATION
(REF004)	AVES 3.5-176 CAB7 140 A/B ORBITER	-10.000	55.000	.000	10.000	SREF 2650.0000 SQ.FT.
(REF005)	AVES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	.000	3.000	LSREF 1250.3000 IN.
(REF003)	AVES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	.000	10.000	SREF 936.6800 IN.
(REF006)	AVES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	.000	3.000	XSREF 1076.4800 IN.
						YHREF .0000 IN.
						ZHREF .0000 IN.
						SCALE .0150 SCALE

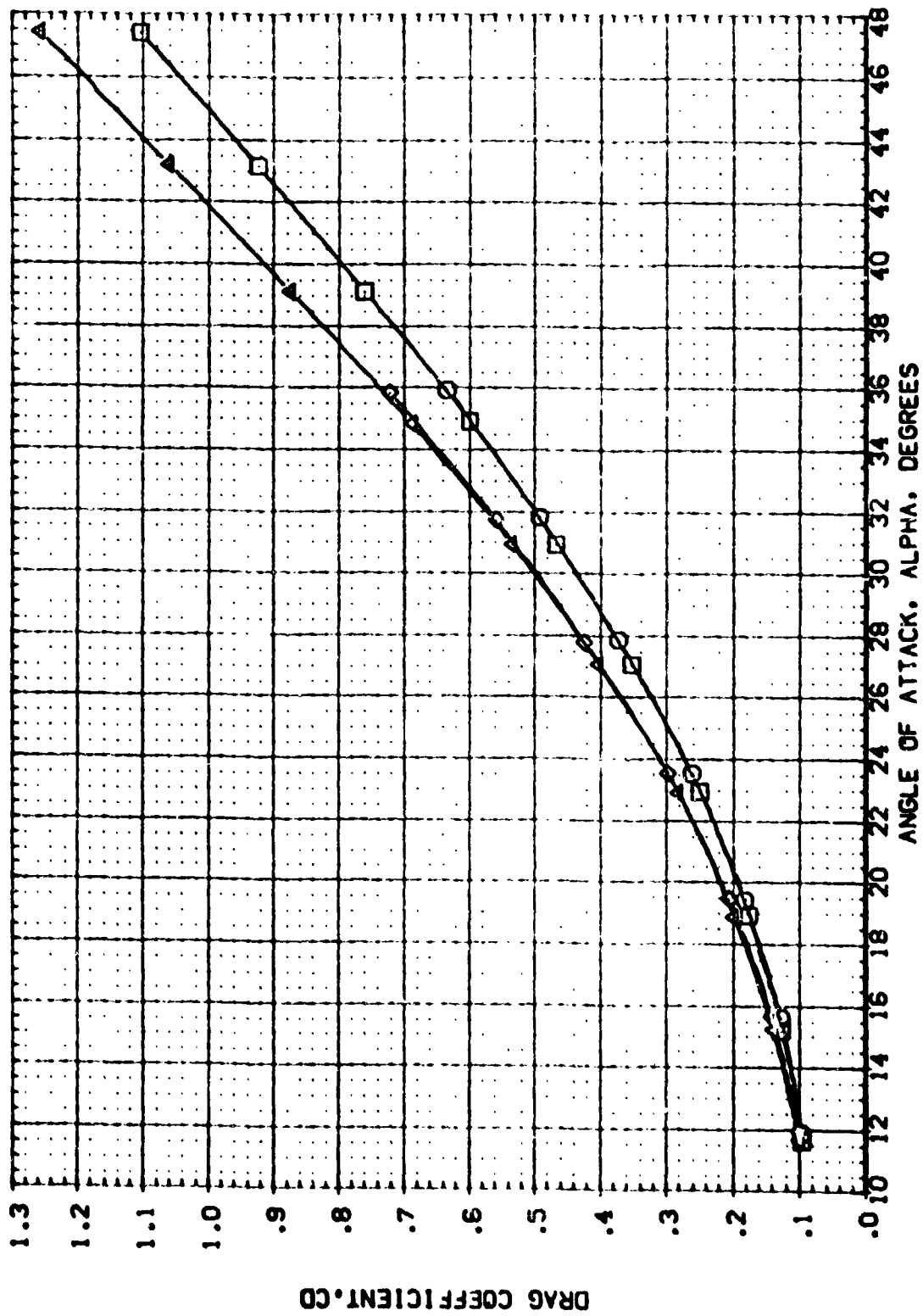


FIG. 15 REYNOLDS NUMBER EFFECTS. BOFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVATION	SPIN RATE	BOFLAP	SCALE	REFERENCE INFORMATION
(REF001)	WES 3.5-175 0487 140 A/S 088102P	10.000	10.000	0.000	3.000	2000.0000 50.00
(REF002)	WES 3.5-175 0487 140 A/S 088102P	10.000	10.000	0.000	3.000	1750.0000 45.00
(REF003)	WES 3.5-175 0487 140 A/S 088102P	10.000	10.000	0.000	3.000	1500.0000 40.00
(REF004)	WES 3.5-175 0487 140 A/S 088102P	10.000	10.000	0.000	3.000	1250.0000 35.00
(REF005)	WES 3.5-175 0487 140 A/S 088102P	10.000	10.000	0.000	3.000	1000.0000 30.00
(REF006)	WES 3.5-175 0487 140 A/S 088102P	10.000	10.000	0.000	3.000	750.0000 25.00
(REF007)	WES 3.5-175 0487 140 A/S 088102P	10.000	10.000	0.000	3.000	500.0000 20.00
(REF008)	WES 3.5-175 0487 140 A/S 088102P	10.000	10.000	0.000	3.000	250.0000 15.00
(REF009)	WES 3.5-175 0487 140 A/S 088102P	10.000	10.000	0.000	3.000	0.0000 10.00

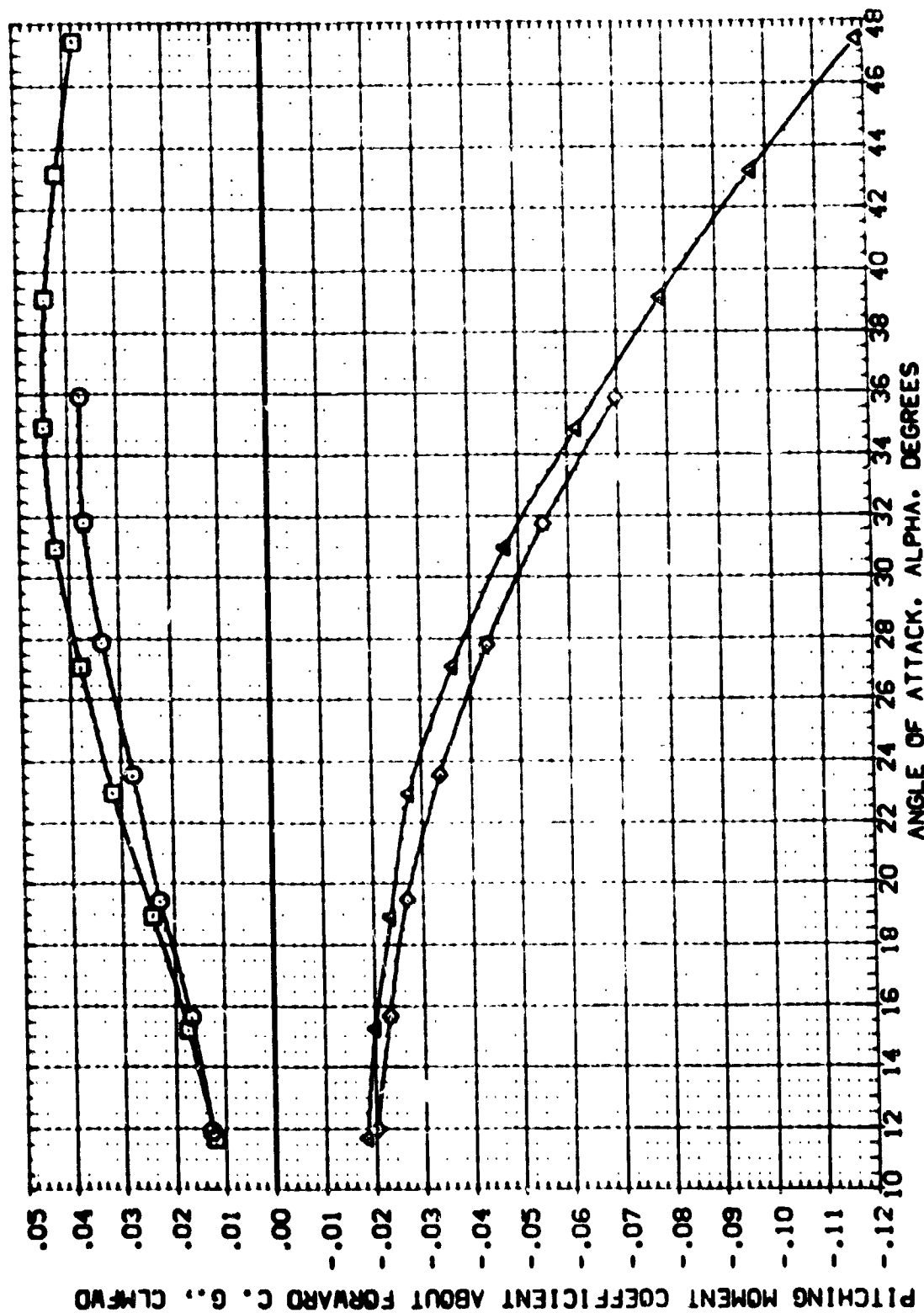


FIG. 15 REYNOLDS NUMBER EFFECTS, BOFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORON	BOFLAP	RUL	REFERENCE INFORMATION
(BETO:5)	AWES 3-5-176 CAB7 140 A/B ORBITER	0.000	55.000	16.300	10.000	REF 2650.0000 50.17
(BETO:0)	AWES 3-5-176 CAB7 140 A/B ORBITER	.000	55.000	16.300	10.000	LINEF 1250.3000 IN.
(BETO:2)	AWES 3-5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	10.000	BASEF 936.6800 IN.
(BETO:1)	AWES 3-5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	10.000	TRAPP 1076.4800 IN.
					SCALE	TRAPP 375.0000 SCALE
						SCALE .0150

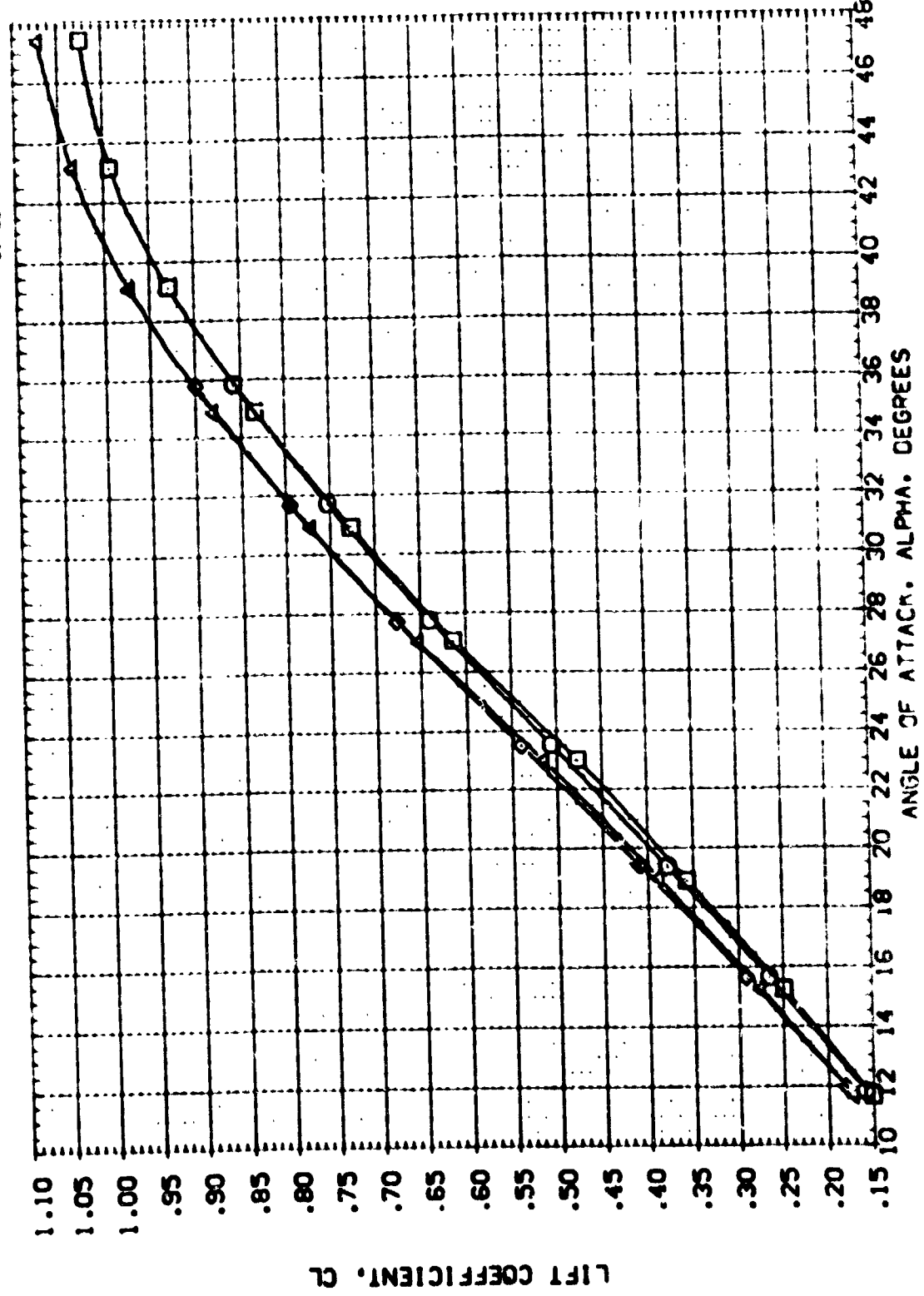


FIG. 16 REYNOLDS NUMBER EFFECTS. BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPURK	BOFLAP	RAIL	REFERENCE INFORMATION
(BEFO15)	WES 3-2-176 CABT 140 A/B CRIBITER	0.00	55.000	16.300	10.000	SREF 2630.0000 50.FT.
(BEFO10)	WES 3-2-176 CABT 140 A/B CRIBITER	0.00	55.000	16.300	10.000	LREF 1250.3000 22.2
(BEFO12)	WES 3-2-176 CABT 140 A/B CRIBITER	10.000	55.000	16.300	10.000	SREF 975.5800 22.2
(BEFO11)	WES 3-2-176 CABT 140 A/B CRIBITER	10.000	55.000	16.300	10.000	SREF 1075.4800 22.2
						YREF 375.0000 22.2
						ZREF 0.0150 22.2
						SCALE

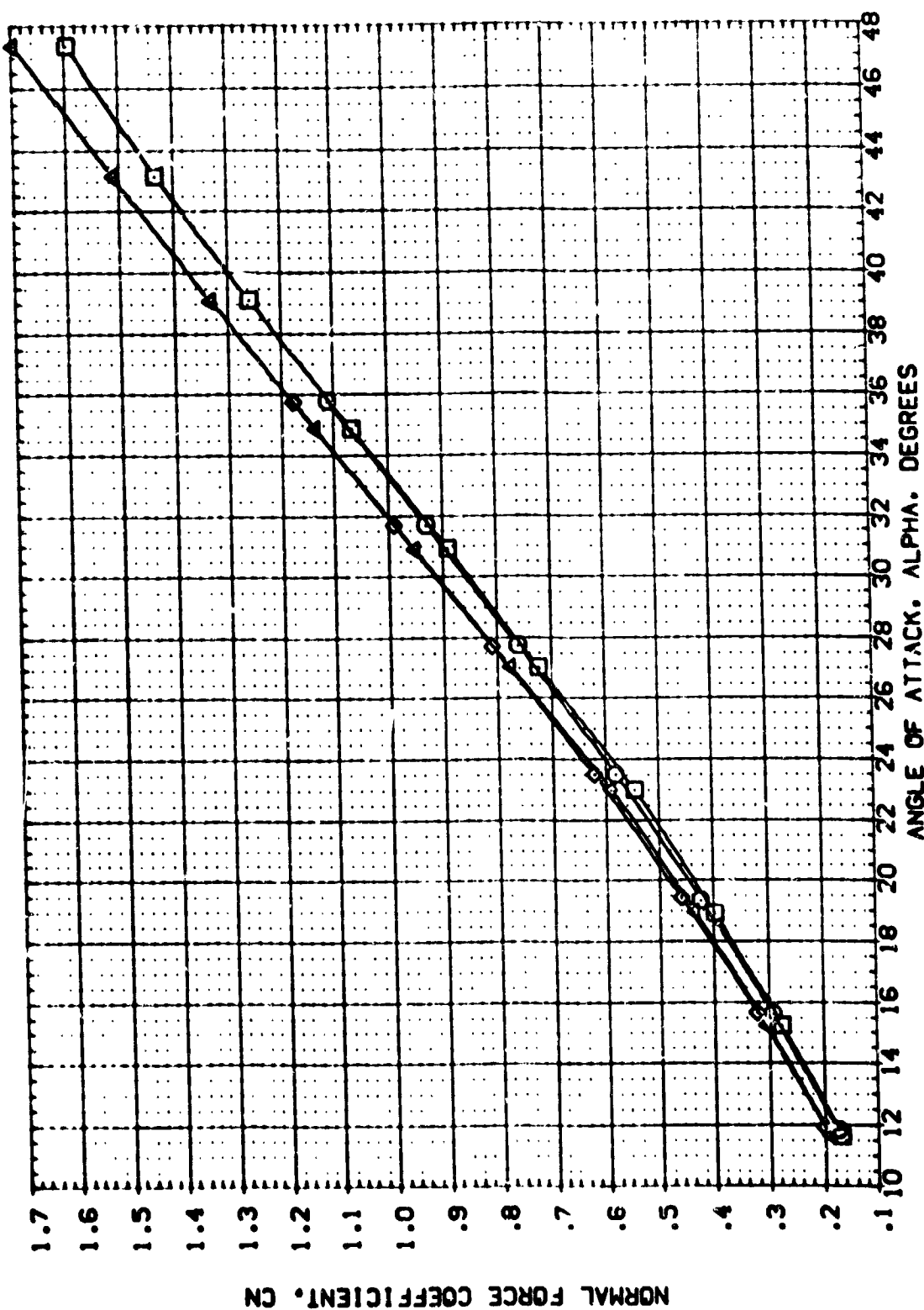


FIG. 16 REYNOLDS NUMBER EFFECTS. BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVATION	SPURR	BDFLAP	RAVL	REFERENCE INFORMATION
(REF015)	AFS 3-5-176 0487 140 A/S 0487/TER	.000	55.000	16.300	10.000	SREF 2690.0000 SQ.FT.
(REF010)	AFS 3-5-176 0487 140 A/S 0487/TER	.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(REF012)	AFS 3-5-176 0487 140 A/S 0487/TER	10.000	55.000	16.300	10.000	BREF 935.6800 IN.
(REF011)	AFS 3-5-176 0487 140 A/S 0487/TER	10.000	55.000	16.300	3.000	APREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .C.A.

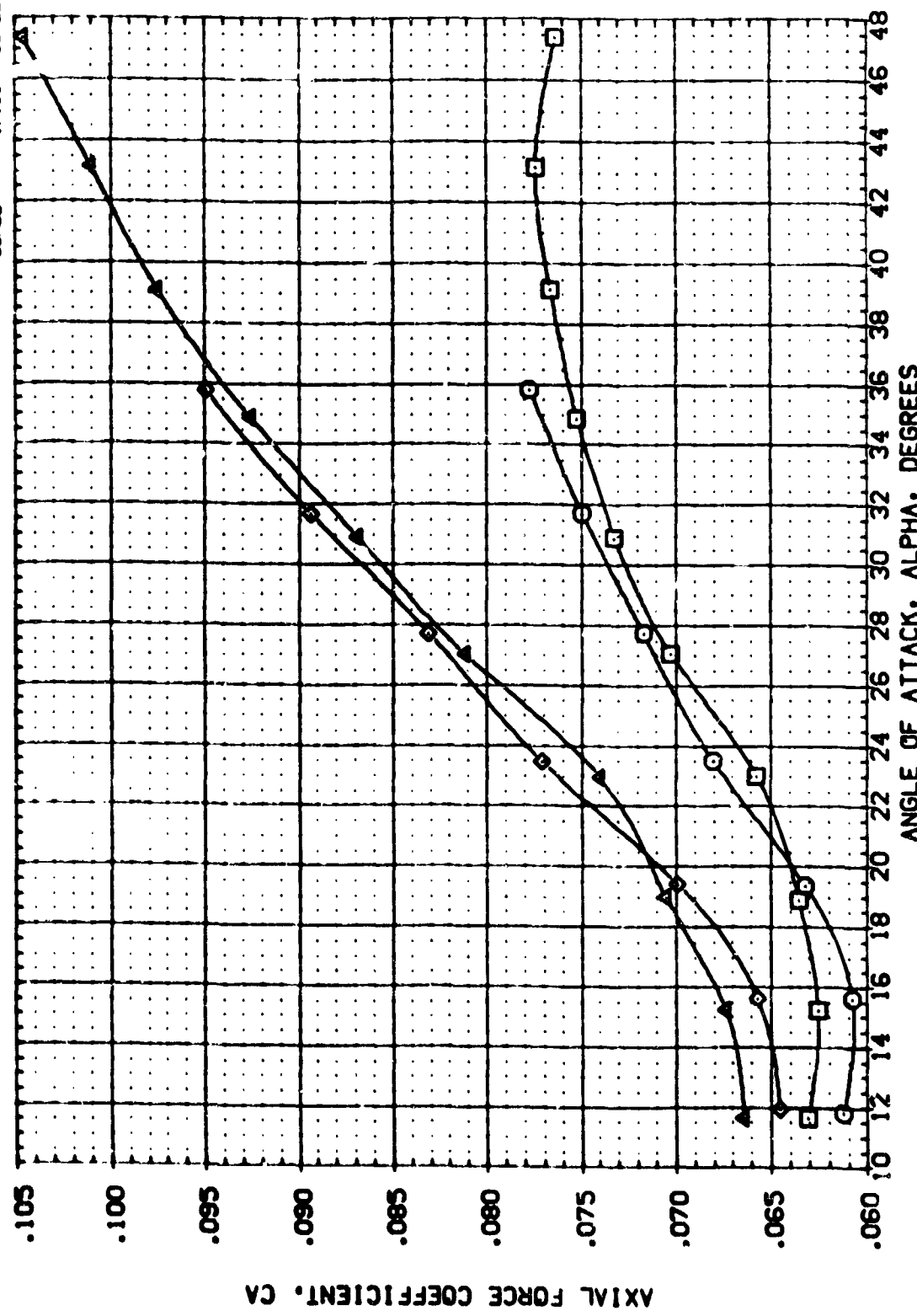


FIG. 16 REYNOLDS NUMBER EFFECTS; BDFLAP=16.3

(A)MACH = 7.32

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORON	BOFLAP	RAVL	REFERENCE INFORMATION
(BEF015)	□	AVES 3.5-176 CAB7 140 A/B ORBITER	.000	55.000	16.300	10.000	SREF 2690.0000 50 FT.
(BEF010)	○	AVES 3.5-176 CAB7 140 A/B ORBITER	.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEF012)	△	AVES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	10.000	SREF 936.6800 IN.
(BEF011)	×	AVES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	XREF 1076.4800 IN.
							YREF .0000 IN.
							ZREF .0150 IN.
							SCALE

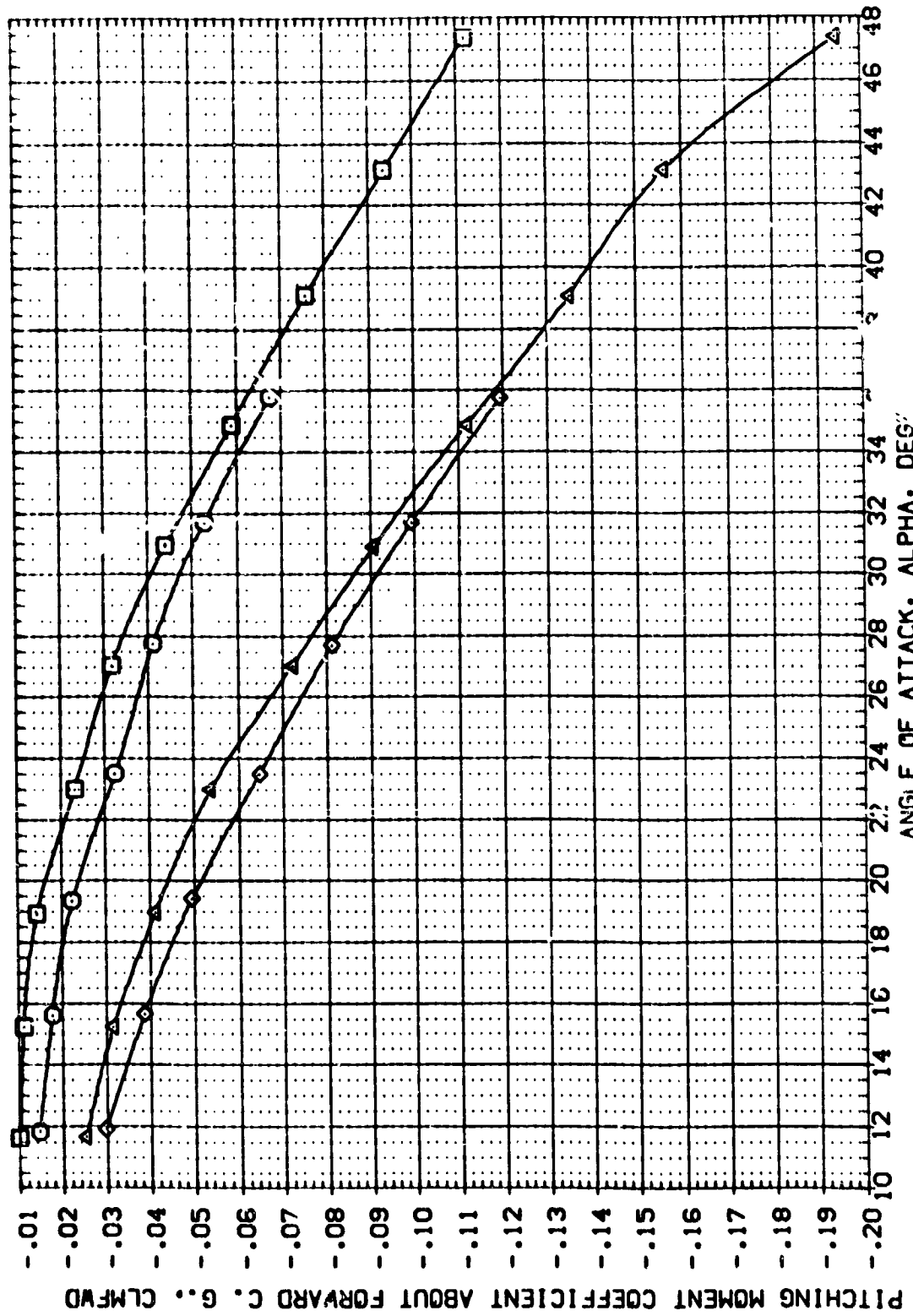


FIG. 16 REYNOLDS NUMBER EFFECTS, BOFLAP=16.3

(A)MACH = 7.32

APPENDIX
TABULATED SOURCE DATA

Plotted data tabulations are
available from DMS on request.

REFERENCE DATA
 SREF = 285.0000 50. FT. XMRP = 1076.4800 IN.
 LREF = 1290.3000 IN. YMRP = .0000 IN.
 BREF = 936.6000 IN. ZMRP = 375.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

APES 3.5-176 OM87 140 A/B ORBITER

RUN NO. 1/ 0 RN/L = 6.95 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	CN	CA	CLMP/D	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.914	.86283	.16610	.05671	-.00580	-.02099	-.02228	-.02196	-.02174	-.02093	-.02110
7.320	15.676	.65415	.27631	.05497	-.00314	-.02150	-.02239	-.02215	-.02219	-.02149	-.02125
7.320	19.508	.65124	.40074	.05560	-.00138	-.02153	-.02236	-.02212	-.02237	-.02163	-.02110
7.320	23.345	.65126	.54311	.05737	-.00190	-.02096	-.02156	-.02125	-.02196	-.02173	-.02061
7.320	27.768	.65233	.71850	.05943	-.00499	-.02011	-.02076	-.02036	-.02067	-.02083	-.01961
7.320	31.791	.65437	.88369	.06036	-.01105	-.01337	-.01997	-.01956	-.02034	-.02034	-.01862
7.320	35.679	.65723	1.03714	.06035	-.02084	-.01909	-.01966	-.01929	-.02025	-.02044	-.01846
7.320	GRADIENT	-.00012	.03746	.07023	-.00038	.00010	.00013	.00013	.00009	.00004	.00015

REFERENCE DATA
 SREF = 2890.0000 50. FT. XMRP = 1076.4800 IN.
 LREF = 1290.3000 IN. YMRP = .0000 IN.
 BREF = 936.6000 IN. ZMRP = 375.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

APES 3.5-176 OM87 140 A/B ORBITER

RUN NO. 2/ 0 RN/L = 5.71 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	CN	CA	CLMP/D	CP1	CP2	CP3	CP4	CP5	CP6
7.320	23.520	.67134	.98.96	.06802	-.03389	-.02161	-.01923	-.02010	-.02085	-.02100	-.02008
7.320	27.765	.67101	.76.768	.07244	-.04359	-.02270	-.01946	-.02025	-.02100	-.02080	-.02119
7.320	31.714	.67173	.93.559	.07607	-.05512	-.02115	-.01858	-.01933	-.02032	-.02062	-.01945
7.320	35.798	.67297	1.11.368	.07870	-.06940	-.02089	-.01834	-.01909	-.02014	-.02078	-.01931
7.320	GRADIENT	.00014	.04.591	.07050	-.00289	.00007	.00009	.00010	.00007	.00002	.00001

TABULATED SOURCE DATA FOR QAB7 (ARC 3.5-176)

DATE 28 JAN 74

(REFR03) (04 DEC 73)

AVES 3.5-176 QAB7 140 A/B ORBITER

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEVON = 10.000 BOFLAP = .000
RUDDER = .000 SPOBRK = 55.000
RN/L = 10.000

REFERENCE DATA

SECF = 2000.0000 50.FT. WARP = 1076.4000 IN.
LECF = 1290.3000 IN. WARP = .7570 IN.
BECF = 936.6000 IN. WARP = 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 3/ 0 RN/L = 0.01 GRADIENT INTERVAL = -3.00/ 5.00

WACH	ALPHA	WOP/L	ON	CA	CLAP/L	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.942	.00949	.10046	.06179	.02725	-.02155	-.02102	-.02190	-.02169	-.02145	-.02110
7.320	15.041	.03794	.07209	.06147	.02370	-.02109	-.02266	-.02192	-.02185	-.02095	-.02115
7.320	19.431	.07200	.14749	.06409	.02074	-.02202	-.02183	-.02201	-.02214	-.02143	-.02120
7.320	23.324	.11111	.26017	.06632	.01376	-.02374	-.02056	-.02160	-.02211	-.02115	-.02030
7.320	27.704	.15102	.37745	.06791	.01463	-.02516	-.02129	-.02124	-.02179	-.02034	-.01912
7.320	31.710	.19150	.49361	.06931	.01510	-.02664	-.02195	-.02140	-.02217	-.02070	-.01945
7.320	35.035	.23209	.61205	.07041	.01544	-.02809	-.02261	-.02197	-.02295	-.02190	-.02071
7.320	GRADIENT	-.00716	.07341	.07102	-.00704	.00711	.00712	.00714	.00709	.00704	.00712

(REFR04) (04 DEC 73)

AVES 3.5-176 QAB7 140 A/B ORBITER

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEVON = -40.000 BOFLAP = .000
RUDDER = .000 SPOBRK = 55.000
RN/L = 10.000

REFERENCE DATA

SECF = 2000.0000 50.FT. WARP = 1076.4000 IN.
LECF = 1290.3000 IN. WARP = .7570 IN.
BECF = 936.6000 IN. WARP = 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 6/ 0 RN/L = 0.04 GRADIENT INTERVAL = -3.00/ 5.00

WACH	ALPHA	WOP/L	ON	CA	CLAP/L	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.942	.01092	.14117	.06796	.01268	-.02076	-.02275	-.02092	-.02030	-.01999	-.01902
7.320	15.041	.03727	.24444	.06200	.01064	-.02126	-.02124	-.02104	-.02128	-.02032	-.02050
7.320	19.431	.07745	.30914	.06235	.02007	-.02169	-.02169	-.02131	-.02166	-.02004	-.02001
7.320	23.324	.12379	.47061	.06432	.02776	-.02274	-.02224	-.01962	-.02087	-.02076	-.01900
7.320	27.704	.16161	.62229	.06603	.03350	-.02375	-.02199	-.01912	-.02118	-.01969	-.01800
7.320	31.710	.20340	.72547	.06749	.03700	-.02456	-.02199	-.01878	-.02164	-.01966	-.01872
7.320	35.040	.25014	.80011	.06776	.03740	-.02542	-.02183	-.01761	-.02144	-.01900	-.01754
7.320	GRADIENT	.00709	.07334	.07111	.00711	.00711	.00712	.00714	.00710	.00705	.00711

DATE 24 JAN 70

TABULATED SOURCE DATA FOR ORBIT (ARC 3.5-176)

PAGE 3

ARC 3.5-176 ORBIT 140 A/B ORBITER

(REPTONS) (14 DEC 75)

REFERENCE DATA

STEP = 2000,0000 50.FT. XAMP = 1076,4000 IN.
 LAMP = 1290,3000 IN. YAMP = .0000 IN.
 SAMP = 976,6000 IN. ZAMP = 375,0000 IN.
 SCALE = .0197 SCALE

PARAMETRIC DATA

BETA = .000 ALLCON = .000
 CLEVON = -40,000 ROTLAP = .000
 RUDDER = .000 SPOBER = 55,000
 RN/L = 3,000

RUN NO. 5/0 RN/L = 1.76 GRADIENT INTERVAL = -5.00/ 5.00

ALPHA	ICP/L	ON	CA	CLAMPD	CP1	CP2	CP3	CP4	CP5	CP6
7.300	.01703	.13615	.06506	.01279	-.01907	-.01000	-.02011	-.01003	-.01797	-.01009
7.320	.01704	.23014	.06639	.01730	-.02041	-.01964	-.02092	-.02073	-.01856	-.01957
7.340	.01706	.35232	.06546	.02409	-.02007	-.01340	-.02050	-.01990	-.01906	-.01992
7.360	.02596	.48004	.06469	.03104	-.01703	-.01234	-.01977	-.01876	-.01959	-.01970
7.380	.02953	.64407	.06509	.03792	-.01935	-.01034	-.01907	-.01907	-.01793	-.01045
7.400	.03010	.79511	.06701	.04270	-.01944	-.01151	-.01900	-.01822	-.01710	-.01739
7.420	.03269	.95223	.06776	.04472	-.01795	-.01030	-.01856	-.01740	-.01726	-.01023
7.440	.03590	1.12290	.06623	.04417	-.01620	-.01430	-.01603	-.01614	-.01560	-.01062
7.460	.03701	1.28151	.06559	.04165	-.01443	-.01315	-.01295	-.01400	-.01495	-.01273
7.480	.04134	1.44265	.06325	.03375	-.01255	-.01135	-.01150	-.01342	-.01364	-.01072
7.500	.04519	1.57113	.06079	.02402	-.01019	-.00921	.00026	.00016	.00015	.00023

REFERENCE DATA

STEP = 2000,0000 50.FT. XAMP = 1076,4000 IN.
 LAMP = 1290,3000 IN. YAMP = .0000 IN.
 SAMP = 976,6000 IN. ZAMP = 375,0000 IN.
 SCALE = .0197 SCALE

PARAMETRIC DATA

BETA = .000 ALLCON = .000
 CLEVON = 10,000 ROTLAP = .000
 RUDDER = .000 SPOBER = 55,000
 RN/L = 3,000

ARC 3.5-176 ORBIT 140 A/B ORBITER

(REPTONS) (14 DEC 75)

RUN NO. 6/0 RN/L = 1.76 GRADIENT INTERVAL = -5.00/ 5.00

ALPHA	ICP/L	ON	CA	CLAMPD	CP1	CP2	CP3	CP4	CP5	CP6
7.300	.01703	.13615	.06506	-.01011	-.01034	-.01019	-.01037	-.01000	-.01047	-.01000
7.320	.01704	.23014	.06639	-.02074	-.01940	-.01970	-.01937	-.02024	-.01950	-.01003
7.340	.01706	.35232	.06546	-.02342	-.01942	-.01929	-.01934	-.02013	-.01963	-.01000
7.360	.02596	.48004	.06469	-.02747	-.01631	-.01617	-.01564	-.01703	-.01932	-.01000
7.380	.02953	.64407	.06509	-.03656	-.01934	-.01814	-.01873	-.01900	-.01932	-.01033
7.400	.03010	.79511	.06701	-.04746	-.01940	-.01771	-.01757	-.01976	-.01937	-.01070
7.420	.03269	.95223	.06776	-.04155	-.01809	-.01739	-.01716	-.01877	-.01990	-.01070
7.440	.03590	1.12290	.06623	-.03470	-.01614	-.01539	-.01297	-.01554	-.01870	-.01277
7.460	.03701	1.28151	.06559	-.02971	-.01401	-.01431	-.01045	-.01045	-.01074	-.01039
7.480	.04134	1.44265	.06325	-.01409	-.01209	-.01222	-.01029	-.01047	-.01045	-.01047
7.500	.04519	1.57113	.06079	-.00280	-.01040	-.00939	.00040	.00033	.00026	.00019

PAGES 3,3-176 0407 140 A/B CREDIT

PAGE 3 3,9-176 0407 143 A/B CRIBITER

REFERENCE DATA

3000 = 1000.0000 IN.	3000 = 1070.4000 IN.
1000 = 1000.0000 IN.	1000 = 1000.0000 IN.
0000 = 910.4000 IN.	0000 = 375.0000 IN.
SCALE = .0195 SCALE	

Run No.	ρ/σ	R_{eff}/λ	Gradient Interval	$\Delta \rho/\sigma$	$\Delta \rho/\sigma$
1	0.0	1.91	-5.00/	5.00	

[illegible]

AMES 3.5-176 QAG7 140 A/B ORBITER

REFERENCE DATA

8027 = 2000,0000 99.97.
 1027 = 1200,3000 IN.
 9027 = 950,6000 IN.
 SCALE = .0190 SCALE

Run No.	10/0	RVL =	1.92	GRADIENT INTERVAL =	-5.00/	5.00
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ALPHA	WFL	ON	CA	CLIMAD	CP1	CP2	CP3	CP4	CP5	CP6
7.360	.67241	.16724	.03303	-.01020	-.02070	-.01423	-.01848	-.01836	-.01563	-.01773
7.360	.66492	.27536	.06293	-.01116	-.02132	-.01505	-.01996	-.01922	-.01614	-.01643
7.360	.66316	.39609	.06355	-.01430	-.02195	-.01520	-.01996	-.01926	-.01636	-.01693
7.360	.66351	.54671	.06371	-.02306	-.01693	-.01067	-.01397	-.01494	-.01536	-.01436
7.360	.66606	.72414	.0724	-.03170	-.02132	-.01434	-.01661	-.01906	-.01703	-.01769
7.360	.66912	.89105	.07319	-.04394	-.02116	-.01369	-.01795	-.01866	-.01664	-.01716
7.360	.67026	1.06626	.07221	-.05667	-.02011	-.01276	-.01636	-.01811	-.01560	-.01564
7.360	.67212	1.23939	.07665	-.07376	-.01817	-.01111	-.01462	-.01685	-.01529	-.01412
7.360	.67399	1.43239	.07739	-.09347	-.01522	-.00472	-.01197	-.01461	-.01333	-.01133
7.360	.67567	1.59663	.07837	-.11204	-.01359	-.00306	-.01166	-.00647	-.00916	-.00464
7.360	.67764	1.81077	.07949	-.13293	-.00929	.00124	-.00931	.00119	.00113	.00029

DATE 26 JUN 74 TABULATED SOURCE DATA FOR QAB7 (ARC 3.5-176)

AVES 3.5-176 QAB7 140 A/B ORBITER

(REF011) (04 DEC 73)

REFERENCE DATA

SRPT = 2000.0000 50.0 FT. YARP = 1076.4800 IN.
LREF = 1200.9000 IN. YARP = .0000 IN.
BRPT = 936.6000 IN. ZARP = 375.0000 IN.
SCALE = .0190 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEVON = 10.000 BOFLAP = 16.300
RUDDER = .000 SPOBRK = 55.000
RW/L = 3.000

RUN NO. 11/ 0 RW/L = 1.95 GRADIENT INTERVAL = -5.00/ 5.00

WACH	ALPHA	ROP/L	ON	CA	CLAMPD	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.844	.00000	.18915	.06660	-.02333	-.02100	-.01233	-.01970	-.01850	-.01878	-.01774
7.320	15.239	.00019	.30063	.06736	-.03152	-.02180	-.01379	-.02030	-.01931	-.01792	-.01839
7.320	18.971	.00473	.43492	.07030	-.04110	-.02820	-.01286	-.01801	-.01906	-.01726	-.01815
7.320	22.979	.00345	.59033	.07404	-.05371	-.01856	-.00816	-.01349	-.01456	-.01531	-.01374
7.320	27.026	.00423	.77369	.06119	-.07223	-.02175	-.01239	-.01898	-.01876	-.01764	-.01761
7.320	30.899	.00496	.95265	.06666	-.09056	-.02103	-.01134	-.01794	-.01791	-.01663	-.01667
7.320	34.803	.00422	1.13781	.06297	-.11234	-.01992	-.01061	-.01654	-.01720	-.01635	-.01573
7.320	38.964	.00729	1.33275	.09755	-.13514	-.01612	-.00716	-.01281	-.01419	-.01484	-.01196
7.320	43.148	.00674	1.51316	.10777	-.15690	-.01272	-.00353	-.00693	-.01030	-.01059	-.00766
7.320	47.399	.00219	1.69818	.10466	-.18454	-.00328	.00369	.00112	-.00349	-.00369	.00176
7.320	GRADIENT	-.00776	.04314	.02116	-.07467	.00736	.00736	.00736	.00733	.00725	.00742

AVES 3.5-176 QAB7 140 A/B ORBITER

(REF012) (04 DEC 73)

REFERENCE DATA

SRPT = 2000.0000 50.0 FT. YARP = 1076.4 TO IN.
LREF = 1200.9000 IN. YARP = .0000 IN.
BRPT = 936.6000 IN. ZARP = 375.0000 IN.
SCALE = .0190 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEVON = 10.000 BOFLAP = 16.300
RUDDER = .000 SPOBRK = 55.000
RW/L = 3.000

RUN NO. 12/ 0 RW/L = 6.45 GRADIENT INTERVAL = -5.00/ 5.00

WACH	ALPHA	ROP/L	ON	CA	CLAMPD	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.843	.00409	.19845	.06432	-.02981	-.02781	-.02077	-.02144	-.02064	-.02026	-.02010
7.320	15.827	.00424	.38036	.06549	-.05057	-.02785	-.02077	-.02119	-.02114	-.02026	-.02014
7.320	19.414	.00935	.45910	.06997	-.04937	-.02108	-.02093	-.02118	-.02122	-.02037	-.02011
7.320	23.403	.00819	.62175	.07113	-.06436	-.01999	-.01992	-.01972	-.02035	-.02082	-.01916
7.320	27.693	.00660	.80924	.07008	-.08115	-.01903	-.01958	-.01956	-.01999	-.01967	-.01876
7.320	31.675	.00691	.99009	.06936	-.10135	-.01944	-.01979	-.01996	-.01943	-.01932	-.01838
7.320	35.749	.00734	1.17748	.06497	-.11954	-.01882	-.01865	-.01842	-.01902	-.01935	-.01789
7.320	GRADIENT	-.00762	.04140	.02136	-.07379	.00710	.00710	.00714	.00709	.00705	.00710

DATE 24 JAN 74

TABULATED SOURCE DATA FOR QAS7 (ARC 3.5-176)

AVES 3.5-176 QAS7 140 A/B ORBITER

PARAMETRIC DATA

BETA = .000 AILRON = .300
ELEVON = 15.000 BOFLAP = 18.300
RUDDER = .000 SPOBRK = 55.000
RN/L = 10.000

REFERENCE DATA

SREF = 2890.0000 SQ.FT. XREF = 1076.4800 IN.
LREF = 1290.3000 IN. YREF = .0000 IN.
BREF = 936.6000 IN. ZREF = 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 13/ 0 RN/L = 6.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	CN	CA	CLAMPD	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.895	.72422	.21426	.07002	-.04322	-.02245	-.02235	-.02270	-.02234	-.02164	-.02174
7.320	15.544	.71126	.33970	.07312	-.05658	-.02244	-.02225	-.02237	-.02249	-.02177	-.02171
7.320	19.346	.70430	.48706	.07974	-.07189	-.02276	-.02252	-.02274	-.02270	-.02250	-.02190
7.320	23.464	.70073	.65462	.08921	-.09027	-.02145	-.02129	-.02101	-.02164	-.02188	-.02085
7.320	27.687	.69628	.84746	.09766	-.11122	-.02164	-.02121	-.02106	-.02161	-.02120	-.02145
7.320	31.616	.69705	1.02994	.10874	-.13173	-.02166	-.02140	-.02114	-.02163	-.02169	-.01990
7.320	35.770	.69656	1.22120	.11378	-.15446	-.02132	-.01990	-.01932	-.02036	-.02163	-.01942
7.320	GRADIENT	-.00104	.04256	.07193	-.00466	.00010	.00011	.00014	.00010	.00005	.00011

(REF013) (04 DEC 73)

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEVON = -40.000 BOFLAP = 18.300
RUDDER = .000 SPOBRK = 55.000
RN/L = 10.000

REFERENCE DATA

SREF = 2890.0000 SQ.FT. XREF = 1076.4800 IN.
LREF = 1290.3000 IN. YREF = .0000 IN.
BREF = 936.6000 IN. ZREF = 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 14/ 0 RN/L = 7.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	CN	CA	CLAMPD	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.895	.64456	.13003	.07051	.00221	-.02150	-.02119	-.02127	-.02122	-.02022	-.02006
7.320	15.489	.64975	.28782	.08679	.00016	-.02142	-.02111	-.02116	-.02141	-.02082	-.02080
7.320	19.431	.65046	.39016	.08777	-.00051	-.02179	-.02149	-.02145	-.02177	-.02090	-.02082
7.320	23.307	.65106	.53596	.07254	-.00275	-.02025	-.02016	-.01979	-.02068	-.02060	-.01985
7.320	27.731	.65193	.70367	.07552	-.00374	-.02005	-.01967	-.01950	-.02039	-.02029	-.01921
7.320	31.997	.65274	.86367	.07915	-.00649	-.01947	-.01932	-.01926	-.02014	-.01962	-.01868
7.320	35.809	.65394	1.03369	.08192	-.01114	-.01893	-.01874	-.01858	-.01959	-.01951	-.01816
7.320	GRADIENT	.00731	.03700	.00080	-.00750	.00011	.00011	.00012	.00006	.00005	.00011

AVES 3.5-176 QAS7 140 A/B ORBITER

(REF014) (04 DEC 73)

DATE 24 JAN 74

TABULATED SOURCE DATA FOR ORBIT (ARC 3.5-176)

ARC 3.5-176 ORBIT 140 A/B ORBITER

(REF015) (04 DEC 73)

PARAMETRIC DATA

REF = 1000.0000 50 FT. 1000 = 1076.4000 IN.
 LREF = 1000.0000 IN. 1000 = .0000 IN.
 REF = 936.6000 IN. 1000 = 375.0000 IN.
 SCALE = .0190 SCALE

RUN NO. 15/ 0 RN/L = 6.11 GRADIENT INTERVAL = -5.00/ 5.00

NAME	ALPHA	REF/L	ON	CA	CLAMPD	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.000	.00000	.17612	.08123	-.01463	-.00000	-.00000	-.00000	-.01970	-.01873	-.01933
7.320	15.013	.07234	.29236	.06079	-.01777	-.00000	-.00000	-.00000	-.00000	-.01917	-.01965
7.320	19.356	.00049	.42290	.06317	-.02242	-.00000	-.00000	-.00000	-.00000	-.01956	-.01964
7.320	23.493	.07041	.50153	.06072	-.03228	-.01944	-.01933	-.01890	-.02009	-.02017	-.01900
7.320	27.720	.00000	.70056	.07170	-.04115	-.01947	-.01899	-.01802	-.01911	-.01854	-.01846
7.320	31.702	.07076	.93168	.07494	-.05262	-.01873	-.01827	-.01794	-.01916	-.01891	-.01729
7.320	35.075	.07233	1.11267	.07772	-.06764	-.01779	-.01732	-.01714	-.01890	-.01800	-.01666
7.320	GRADIENT	-.07224	.03941	.07077	-.07221	.07011	.07012	.07014	.07006	.07005	.07012

PARAMETRIC DATA

REF = 1000.0000 50 FT. 1000 = 1076.4000 IN.
 LREF = 1000.0000 IN. 1000 = .0000 IN.
 REF = 936.6000 IN. 1000 = 375.0000 IN.
 SCALE = .0190 SCALE

RUN NO. 16/ 0 RN/L = 6.53 GRADIENT INTERVAL = -5.00/ 5.00

NAME	ALPHA	REF/L	ON	CA	CLAMPD	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.071	.00001	.16810	.08657	-.00376	-.00190	-.00011	-.00105	-.00073	-.00043	-.00053
7.320	15.076	.00012	.27599	.07679	-.00011	-.00172	-.00034	-.00120	-.00116	-.00083	-.00080
7.320	19.405	.04733	.39906	.05150	.07287	-.02189	-.00043	-.00136	-.00135	-.00116	-.00079
7.320	23.566	.04763	.54413	.05992	.07344	-.02039	-.01977	-.01970	-.00009	-.00043	-.01949
7.320	27.803	.04954	.71478	.06116	.07270	-.00706	-.01910	-.01900	-.00001	-.00072	-.01940
7.320	31.837	.00041	.87903	.06255	-.00104	-.00111	-.01933	-.01915	-.01959	-.01909	-.01802
7.320	35.930	.00293	1.05199	.06287	-.00045	-.01937	-.01906	-.01906	-.01916	-.01943	-.01841
7.320	GRADIENT	-.00012	.03713	.07285	-.00015	.07289	.07210	.07212	.07206	.07206	.07210

ARC 3.5-176 ORBIT 140 A/B ORBITER

(REF016) (04 DEC 73)

DATE 26 JAN 74
 LABULATED SQUARE DATA FOR CASE (ABR 3.3-170)
 AMES 3.3-170 1407 140 A/B ORBITER

(REF019) (04 DEC 73)

PARAMETRIC DATA

BETA = .000
 ELEVON = 10.000
 RUDDER = .000
 RAIL = 10.000

REF = 2000.0000 50.0 FT.
 LREF = 1000.0000 IN.
 BREF = 990.0000 IN.
 SCALE = .0150 SCALE

REFERENCE DATA

RUN NO. 177 0 RAIL = 0.02 GRADIENT INTERVAL = -3.00/ 3.00

WACH	ALPHA	REF/L	ON	CA	CLAMPD	CP1	CP2	CP3	CP4	CP5	CP6
7.380	11.913	.01010	.14120	.07053	.01296	-.02109	-.02087	-.02176	-.02133	-.02044	-.02099
7.380	15.803	.02374	.24667	.04247	.01750	-.02252	-.02074	-.02193	-.02168	-.02081	-.02113
7.380	19.439	.02931	.30670	.02224	.02430	-.02253	-.02115	-.02211	-.02274	-.02119	-.02137
7.380	23.010	.02744	.37463	.04453	.03790	-.02766	-.01931	-.02013	-.02050	-.02083	-.01970
7.380	27.095	.02000	.06474	.06554	.03090	-.02100	-.01957	-.02042	-.02079	-.02017	-.02014
7.380	31.843	.03037	.01513	.04740	.04341	-.02042	-.01897	-.01977	-.02074	-.01994	-.01946
7.380	35.950	.03254	.97423	.04792	.04616	-.01946	-.01820	-.01834	-.01931	-.01931	-.01866
7.380	GRADIENT	.00000	.00000	.00013	.00146	.00011	.00012	.00013	.00009	.00005	.00010

(REF010) (04 DEC 73)

PARAMETRIC DATA

BETA = .000
 ELEVON = 10.000
 RUDDER = .000
 RAIL = 10.000

REF = 2000.0000 50.0 FT.
 LREF = 1000.0000 IN.
 BREF = 990.0000 IN.
 SCALE = .0150 SCALE

REFERENCE DATA

RUN NO. 187 0 RAIL = 0.06 GRADIENT INTERVAL = -3.00/ 3.00

WACH	ALPHA	REF/L	ON	CA	CLAMPD	CP1	CP2	CP3	CP4	CP5	CP6
7.380	11.878	.00872	.10750	.08269	-.01870	-.02070	-.02110	-.02168	-.02129	-.02089	-.02078
7.380	15.800	.07508	.30410	.08246	-.02074	-.02203	-.02126	-.02183	-.02164	-.02090	-.02091
7.380	19.408	.00937	.43773	.06511	-.02390	-.02113	-.02144	-.02277	-.02271	-.02146	-.02103
7.380	23.323	.00004	.59327	.06950	-.02097	-.02077	-.02042	-.02155	-.02177	-.02112	-.01946
7.380	27.778	.00700	.77243	.07359	-.03717	-.01994	-.02022	-.02052	-.02094	-.02102	-.01939
7.380	31.793	.00837	.94561	.07758	-.04725	-.01924	-.01931	-.01942	-.02033	-.02133	-.01891
7.380	35.836	.00904	1.12505	.08003	-.06010	-.01849	-.01913	-.01926	-.02012	-.02037	-.01861
7.380	GRADIENT	-.00000	.00000	.00003	-.00171	.00009	.00011	.00011	.00012	.00012	.00011

DATE 24 JAN 74

TABULATED SOURCE DATA FOR ORBIT (AFC 3.5-176)

PAGE 11

AMES 3.5-176 ORBIT 140 A/B ORBITER

(REF021) (04 DEC 73)

REFERENCE DATA

SREF = 2000.0000 90.FT. XREF = 1076.4000 IN.
 LREF = 1290.5000 IN. YREF = .0000 IN.
 BREF = 936.0000 IN. ZREF = 375.0000 IN.
 SCALE = .0190 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVON = 10.000 BOFLAP = 16.300
 RUDDER = .000 SPOBRK = 55.000
 RN/L = 3.000

RUN NO. 21/ 0 RN/L = 1.74 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	ON	CA	CLMFO	CP1	CP2	CP3	CP4	CP5	CP6
9.255	11.001	.71333	.23225	.07028	-.03996	-.04064	-.04011	-.04420	-.03896	-.07404	-.03055
9.255	15.232	.70370	.33324	.07636	-.05348	-.04047	-.04008	-.04347	-.04001	-.03699	-.03927
9.255	18.904	.70166	.49521	.07920	-.06964	-.04167	-.04108	-.04471	-.04140	-.03761	-.04006
9.255	23.152	.69966	.65676	.08305	-.08670	-.04050	-.04000	-.03965	-.04075	-.04003	-.03946
9.255	27.191	.69750	.83142	.08910	-.10947	-.04087	-.03976	-.04196	-.04002	-.03647	-.03875
9.255	31.114	.69621	1.03555	.09674	-.13006	-.04067	-.03953	-.04105	-.03957	-.03646	-.03861
9.255	35.063	.69502	1.22264	.10151	-.15233	-.04031	-.03896	-.04017	-.03895	-.03674	-.03836
9.255	39.048	.69337	1.42254	.10552	-.17544	-.03958	-.03837	-.03951	-.03608	-.03665	-.03714
9.255	43.061	.69339	1.67655	.10954	-.19823	-.03866	-.03764	-.03990	-.03595	-.03461	-.03437
9.255	47.222	.69303	1.76496	.10441	-.21991	.00043	-.00661	-.01058	-.01012	.00007	-.00305
GRADIENT		-.00041	.04382	.00101	-.00006	.00082	.00053	.00059	.00047	.00054	.00057

AMES 3.5-176 ORBIT 140 A/B ORBITER

(REF022) (04 DEC 73)

REFERENCE DATA

SREF = 2000.0000 90.FT. XREF = 1076.4000 IN.
 LREF = 1290.5000 IN. YREF = .0000 IN.
 BREF = 936.0000 IN. ZREF = 375.0000 IN.
 SCALE = .0190 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVON = .000 BOFLAP = .000
 RUDDER = .000 SPOBRK = 55.000
 RN/L = 3.000

RUN NO. 22/ 0 RN/L = 2.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	ON	CA	CLMFO	CP1	CP2	CP3	CP4	CP5	CP6
9.255	11.745	.68640	.19879	.06680	-.00995	-.04077	-.04037	-.04305	-.04040	-.03641	-.03095
9.255	15.332	.68399	.30362	.06621	-.01142	-.04085	-.04068	-.04302	-.04140	-.03976	-.03972
9.255	19.043	.68137	.43516	.06515	-.01347	-.04210	-.04178	-.04401	-.04282	-.04054	-.04056
9.255	23.196	.68263	.59496	.06599	-.02046	-.04061	-.04074	-.04400	-.04199	-.04123	-.03961
9.255	27.259	.68114	.76216	.06705	-.02313	-.04048	-.03962	-.04194	-.04067	-.03933	-.03863
9.255	31.192	.68259	.92879	.06693	-.03132	-.04021	-.03946	-.04097	-.04075	-.03917	-.03831
9.255	35.253	.68420	1.10426	.06644	-.04203	-.04005	-.03932	-.04071	-.04097	-.03960	-.03822
9.255	39.364	.68648	1.37424	.06533	-.05649	-.03931	-.03865	-.03966	-.04093	-.03971	-.03868
9.255	43.094	.68655	1.62275	.06379	-.07465	-.03706	-.03640	-.03758	-.03866	-.03722	-.03631
9.255	47.926	.68979	1.63629	.06054	-.08930	-.03504	-.03391	-.03479	-.03719	-.03647	-.03526
GRADIENT		.00012	.04117	-.00014	-.00020	.00016	.00016	.00020	.00019	.00006	.00018

DATE 24 JAN 74

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TABULATED SOURCE DATA FOR QAB7 (ARC 3.5-176)

AMES 3.5-176 QAB7 140 A/B ORBITER

(REF023) (04 DEC 73)

PARAMETRIC DATA

REFERENCE DATA

SREF = 2090.0000 50.FT. XREF = 1076.4000 IN.
 LREF = 1290.3000 IN. YREF = .0000 IN.
 BREF = 936.6000 IN. ZREF = 375.0000 IN.
 SCALE = .0190 SCALE

BETA = .000 AILRON = .000
 ELEVON = .000 BOFLAP = .000
 RUDDER = .000 SPOBRK = 55.000
 RN/L = 1.300

RUN NO. 23/ 0 RN/L = 1.04 GRADIENT INTERVAL = -5.00/ 5.00

	ALPHA	XCP/L	ON	CA	CLAMPD	CP1	CP2	CP3	CP4	CP5	CP6
1.ACH											
5.207	11.633	.67115	.16763	.08663	-.01079	-.03957	-.03970	-.03974	-.03991	-.03996	-.03985
5.207	15.217	.68423	.29903	.06671	-.01142	-.04071	-.03962	-.04015	-.04106	-.03966	-.03953
5.207	16.937	.68170	.41324	.06446	-.01316	-.04159	-.04053	-.04076	-.04157	-.04005	-.03967
5.170	22.764	-.195.54800	-.00070	-.07119	-.00032	.90407	.51280	.52237	.51074	.51229	.51160
5.207	23.049	.65073	.56332	.06310	-.01339	-.04106	-.04010	-.04017	-.04130	-.04017	-.03955
5.207	27.020	.65051	.71334	.06246	-.01655	-.04069	-.03976	-.03946	-.04065	-.03960	-.03916
5.207	30.896	.65976	.87750	.06147	-.02337	-.04076	-.03866	-.03823	-.04021	-.03932	-.03844
5.207	34.899	.66199	1.04664	.06060	-.03424	-.03954	-.03830	-.03763	-.04021	-.03993	-.03813
5.207	39.039	.66362	1.23434	.05979	-.04643	-.03860	-.03752	-.03691	-.03966	-.04019	-.03864
5.207	43.137	.66561	1.40317	.05766	-.06036	-.03721	-.03612	-.03543	-.03905	-.03895	-.03850
5.207	47.423	.66761	1.57992	.05621	-.07654	-.03592	-.03471	-.03421	-.03610	-.03769	-.03600
5.207	GRADIENT	.64266	.04209	-.00303	-.01167	-.00222	-.00224	-.00225	-.00231	-.00237	-.00223

(REF024) (04 DEC 73)

AMES 3.5-176 QAB7 140 A/B ORBITER

PARAMETRIC DATA

REFERENCE DATA

SREF = 2090.0000 50.FT. XREF = 1076.4000 IN.
 LREF = 1290.3000 IN. YREF = .0000 IN.
 BREF = 936.6000 IN. ZREF = 375.0000 IN.
 SCALE = .0190 SCALE

BETA = .000 AILRON = .000
 ELEVON = .000 BOFLAP = .000
 RUDDER = .000 SPOBRK = 35.000
 RN/L = 1.300

RUN NO. 24/ 0 RN/L = .76 GRADIENT INTERVAL = -5.00/ 5.00

	ALPHA	XCP/L	ON	CA	CLAMPD	CP1	CP2	CP3	CP4	CP5	CP6
1.ACH											
7.320	11.732	.66197	.17085	.06466	-.00556	-.01769	-.01319	-.01763	-.01565	-.01097	-.01373
7.320	15.332	.65312	.26461	.06261	-.00219	-.01699	-.01951	-.01679	-.01760	-.01236	-.01565
7.320	16.979	.64909	.37677	.06240	.00009	-.01960	-.01969	-.01913	-.01801	-.01356	-.01667
7.320	22.970	.66015	.50799	.06172	-.01405	-.01230	-.01234	-.00946	-.01250	-.01243	-.01043
7.320	27.016	.65069	.66654	.06226	-.00165	-.01927	-.01507	-.01774	-.01742	-.01341	-.01621
7.320	30.967	.65337	.80063	.06126	-.00736	-.01920	-.01872	-.01704	-.01716	-.01341	-.01567
7.320	34.795	.65693	.92960	.05944	-.01737	-.01781	-.01714	-.01507	-.01616	-.01270	-.01462
7.320	38.995	.65876	1.10617	.06034	-.02647	-.01639	-.01351	-.01359	-.01536	-.01327	-.01350
7.320	43.510	.66407	1.25976	.05731	-.05079	-.01343	-.01313	-.01096	-.01367	-.01209	-.01125
7.320	47.232	.66716	1.41159	.05540	-.06596	-.01133	-.01066	-.00652	-.01241	-.01114	-.00964
7.320	GRADIENT	.00026	.03555	-.00761	-.00160	.00019	.00016	.00023	.00009	.00000	.00011

DATE 24 JAN 74 TABULATED SOURCE DATA FOR OA87 (ARC 3.5-176)

(REF025) (04 DEC 73)

AMES 3.5-176 OA87 140 A/B ORBITER

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEVON = .000 BOFLAP = .000
RUDDER = .000 SPDBRK = 55.000
RN/L = .610

REFERENCE DATA

SREF = 2890.0000 SQ.FT. XMRP = 1076.4800 IN.
LREF = 1290.3000 IN. YMRP = .0000 IN.
BREF = 936.6000 IN. ZMRP = 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 25/ 0 RN/L = .53 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	ON	CA	CLMPD	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.646	.66418	.16319	.06491	-.00630	-.02021	-.02029	-.02066	-.01677	-.01323	-.01702
7.320	15.245	.65281	.25418	.06281	-.00196	-.02182	-.02175	-.02240	-.01896	-.01560	-.01899
7.320	18.925	.64874	.35955	.06197	.00121	-.02208	-.02190	-.02225	-.01870	-.01529	-.01937
7.320	22.611	.63633	.50000	.06799	-.00949	-.00191	-.00695	-.00498	-.00546	-.00528	-.00447
7.320	26.301	.63210	.63784	.06229	-.00369	-.02160	-.02163	-.02151	-.01863	-.01570	-.01900
7.320	30.040	.63478	.78667	.06168	-.01027	-.02106	-.02188	-.02035	-.01799	-.01655	-.01857
7.320	33.729	.63329	.93329	.06026	-.03457	-.01837	-.01906	-.01817	-.01666	-.01642	-.01655
7.320	37.429	.63335	1.15936	.06015	-.07362	-.01612	-.01657	-.01534	-.01483	-.01521	-.01407
7.320	41.129	.63614	1.33776	.06247	-.05875	-.01487	-.01551	-.01439	-.01404	-.01506	-.01299
7.320	44.829	.67027	1.58632	.06786	-.08747	-.01427	-.01493	-.01371	-.01368	-.01466	-.01235
7.320	48.529	.00346	.00341	-.00011	-.00244	.00014	.00013	.00018	.00008	-.00007	.00011

GRADIENT

(REF026) (04 DEC 73)

AMES 3.5-176 OA87 140 A/B ORBITER

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEVON = .000 BOFLAP = .000
RUDDER = .000 SPDBRK = 55.000
RN/L = 3.000

REFERENCE DATA

SREF = 2890.0000 SQ.FT. XMRP = 1076.4800 IN.
LREF = 1290.3000 IN. YMRP = .0000 IN.
BREF = 936.6000 IN. ZMRP = 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 26/ 0 RN/L = 1.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	ON	CA	CLMPD	CP1	CP2	CP3	CP4	CP5	CP6
10.270	11.711	.66609	.14196	.03734	-.00822	-.00944	-.01036	-.01027	-.00864	-.00822	-.00799
10.270	15.300	.65423	.25815	.03632	-.00275	-.00990	-.01091	-.01076	-.00938	-.00731	-.00872
10.270	18.939	.65043	.34781	.03692	-.00043	-.00981	-.01079	-.01048	-.00933	-.00731	-.00868
10.270	22.671	.64831	-.06677	.03343	-.00030	13.98660	14.13460	14.21670	14.18080	14.17230	14.04780
10.270	26.393	.64992	.46415	.03754	-.00008	-.00732	-.00835	-.00790	-.00721	-.00653	-.00706
10.270	30.093	.65281	.64717	.06012	-.00439	-.00054	-.00689	-.00689	-.00791	-.00714	-.00728
10.270	33.733	.65494	.80796	.06094	-.01081	-.00770	-.00831	-.00811	-.00722	-.00685	-.00651
10.270	37.433	.65828	.96832	.06172	-.02184	-.00806	-.00874	-.00839	-.00766	-.00702	-.00662
10.270	41.133	.65828	.03610	.00027	-.00063	-.00884	-.00895	-.00896	-.00897	-.00906	-.00888

GRADIENT

DATE 24 JAN 74 TABULATED SOURCE DATA FOR ORBIT (ARC 3.5-176)

AMES 3.5-176 ORBIT 14D A/B ORBITER

(REF027) (04 DEC 73)

REFERENCE DATA

SREF = 2090.0000 50.0 FT. XMRP = 1076.4800 IN.
LREF = 1290.3000 IN. YMRP = .0000 IN.
BREF = 936.6000 IN. ZMRP = 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 27/ 0 RN/L = 1.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	ON	CA	CLMP/D	CP1	CP2	CP3	CP4	CP5	CP6
10.270	11.097	.64726	.13290	.06502	.00050	-.00793	-.00768	-.00755	-.00736	-.00310	-.00642
10.270	15.367	.64992	.23772	.06337	.00060	-.00829	-.00806	-.00794	-.00774	-.00596	-.00729
10.270	19.038	.65043	.35484	.06379	-.00044	-.00801	-.00767	-.00742	-.00745	-.00596	-.00697
10.270	23.042	.65367	.49494	.06996	-.00523	-.00684	-.00656	-.00582	-.00678	-.00668	-.00626
10.270	27.128	.65321	.65715	.07493	-.00576	-.00674	-.00629	-.00565	-.00648	-.00552	-.00586
10.270	30.990	.65438	.87948	.07923	-.00968	-.00555	-.00495	-.00433	-.00536	-.00552	-.00451
10.270	34.962	.65580	.97484	.08307	-.01544	-.00556	-.00499	-.00441	-.00547	-.00565	-.00479
GRADIENT		.00036	.03647	.00067	-.00069	.00013	.00014	.00017	.00010	-.00000	.00011

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEVON = -40.000 BOFLAP = 16.300
RUDDER = .000 SPDBRK = 95.000
RN/L = 3.000

AME 3.5-176 ORBIT 14D A/B ORBITER

(REF028) (04 DEC 73)

REFERENCE DATA

SREF = 2090.0000 50.0 FT. XMRP = 1076.4800 IN.
LREF = 1290.3000 IN. YMRP = .0000 IN.
BREF = 936.6000 IN. ZMRP = 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 28/ 0 RN/L = 1.79 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	ON	CA	CLMP/D	CP1	CP2	CP3	CP4	CP5	CP6
10.270	11.715	.70279	.17128	.06242	-.02458	-.00808	-.00795	-.00796	-.00777	-.00808	-.00636
10.270	15.376	.69090	.28250	.06337	-.03141	-.00839	-.00821	-.00820	-.00816	-.00597	-.00679
10.270	19.074	.68764	.41115	.06785	-.04250	-.00848	-.00810	-.00792	-.00806	-.00602	-.00676
10.270	23.025	.68959	.57192	.07482	-.06156	-.00776	-.00755	-.00702	-.00812	-.00842	-.00685
10.270	27.127	.68868	.75090	.08158	-.07892	-.00716	-.00679	-.00631	-.00684	-.00547	-.00540
10.270	30.951	.68899	.92732	.08831	-.09831	-.00606	-.00563	-.00534	-.00611	-.00578	-.00444
10.270	34.915	.68915	1.10611	.09465	-.11795	-.00591	-.00536	-.00497	-.00600	-.00669	-.00459
GRADIENT		-.00040	.04082	.00148	-.00045	.00012	.00013	.00015	.00010	-.00001	.00011

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEVON = 10.000 BOFLAP = 16.300
RUDDER = .000 SPDBRK = 95.000
RN/L = 3.000

DATE 24 JAN 74

TABULATED SOURCE DATA FOR OA87 (ARC 3.5-176)

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AMES 3.5-176 OA87 140 A/B ORBITER

(REF 029) (04 DEC 73)

REFERENCE DATA

SREF = 2090.0000 SQ.FT. XMRP = 1076.4800 IN.
 LREF = 1290.3000 IN. YMRP = .0000 IN.
 BREF = 936.6000 IN. ZMRP = 375.0000 IN.
 SCALE = .0150 SCALE

BETA = .000 AILRON = .000
 ELEVON = -40.000 BDFLAP = -11.700
 RUDDER = .000 SPDBRK = 55.000
 RN/L = 3.000

PARAMETRIC DATA

RUN NO. 29/ 0 RN/L = 1.79 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	ON	CA	CLMP/D	CP1	CP2	CP3	CP4	CP5	CP6
10.270	11.664	.62584	.12431	.06354	.00815	-.00564	-.00474	-.00479	-.00480	-.00356	-.00267
10.270	15.284	.62685	.22242	.06129	.01397	-.00599	-.00515	-.00526	-.00532	-.00485	-.00349
10.270	19.046	.62622	.33097	.06118	.02136	-.00553	-.00469	-.00470	-.00503	-.00431	-.00310
10.270	23.003	.62734	.43806	.06213	.02817	-.00428	-.00359	-.00331	-.00424	-.00347	-.00296
10.270	27.099	.62828	.61316	.06490	.03614	-.00453	-.00346	-.00333	-.00406	-.00436	-.00210
10.270	31.010	.63084	.76160	.06669	.03959	-.00325	-.00241	-.00183	-.00268	-.00326	-.00070
10.270	34.963	.63227	.91721	.06812	.04412	-.00283	-.00160	-.00146	-.00238	-.00369	-.00345
	GRADIENT	.00027	.03420	.00726	.00159	.00014	.00015	.00017	.00012	.00003	.00012

REFERENCE DATA

SREF = 2090.0000 SQ.FT. XMRP = 1076.4800 IN.
 LREF = 1290.3000 IN. YMRP = .0000 IN.
 BREF = 936.6000 IN. ZMRP = 375.0000 IN.
 SCALE = .0150 SCALE

BETA = .000 AILRON = .000
 ELEVON = .000 BDFLAP = .000
 RUDDER = .000 SF BRK = 55.000
 RN/L = 3.000

PARAMETRIC DATA

RUN NO. 30/ 0 RN/L = 1.79 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	ON	CA	CLMP/D	CP1	CP2	CP3	CP4	CP5	CP6
10.270	11.655	.66746	.14370	.05825	-.00683	-.00825	-.00739	-.00687	-.00781	-.00650	-.00564
10.270	15.303	.65556	.24311	.05700	-.00370	-.00857	-.00786	-.00723	-.00820	-.00726	-.00632
10.270	19.012	.65175	.35692	.05787	-.00173	-.00830	-.00747	-.00687	-.00796	-.00688	-.00608
10.270	22.986	.65447	.49455	.05043	-.00804	-.00712	-.00644	-.00573	-.00745	-.00769	-.00617
10.270	27.107	.65334	.66506	.06160	-.00608	-.00721	-.00640	-.00570	-.00689	-.00726	-.00501
10.270	31.021	.65537	.82666	.06301	-.01256	-.00573	-.00474	-.00408	-.00585	-.00703	-.00344
10.270	35.005	.65850	1.00643	.06447	-.02331	-.00604	-.00511	-.00435	-.00633	-.00675	-.00383
	GRADIENT	-.00022	.03713	.00032	-.00066	.00012	.00013	.00017	.00009	-.00001	.00011

DATE 19 MAR 74

TABULATED SOURCE DATA FOR 7407 (ARC 3.5-176)

PAGE 10

AMES 3.5-176 Q407 140 A/B ORBITER

(AEF701) (04 DEC 73)

REFERENCE DATA

SREF = 2090.0000 SQ.FT. XMRP = 1076.4000 IN.
 LREF = 1290.3000 IN. YMRP = .0000 IN.
 BREF = 936.6000 IN. ZMRP = 379.0000 IN.
 SCALE = .0150 SCALE

RUN NO. 1/0 RN/L = 6.95 GRADIENT INTERVAL = -5.00/ 9.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
7.320	11.914	-.00010	-.00057	-.00055	.15001	.06976	1.07979
7.320	15.676	-.00030	-.00080	-.00057	.25116	.12758	1.06480
7.320	19.509	-.00072	-.00129	-.00066	.35916	.16629	1.92655
7.320	23.545	-.00056	-.00154	-.00051	.47498	.26935	1.70210
7.320	27.766	-.00046	-.00145	-.00073	.60193	.36755	1.56965
7.320	31.791	-.00046	-.00141	-.00091	.71932	.51649	1.39173
7.320	35.673	-.00026	-.00172	-.00072	.82114	.66446	1.22844
GRADIENT	-.00010	-.00004	-.00001	-.00001	.02844	.02423	-.02581

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEWIN = .000 BOFLAP = .000
 RUDDER = .000 SDOBER = 99.000
 RN/L = 10.000

AMES 3.5-176 Q407 140 A/B ORBITER

(AEF702) (04 DEC 73)

REFERENCE DATA

SREF = 2090.0000 SQ.FT. XMRP = 1076.4000 IN.
 LREF = 1290.3000 IN. YMRP = .0000 IN.
 BREF = 936.6000 IN. ZMRP = 379.0000 IN.
 SCALE = .0150 SCALE

RUN NO. 2/0 RN/L = 5.71 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
7.320	23.520	-.00064	-.00130	-.00065	.50829	.29541	1.72061
7.320	27.765	-.00071	-.00132	-.00087	.64112	.41939	1.52464
7.320	31.714	-.00032	-.00131	-.00111	.75335	.55495	1.35751
7.320	35.798	-.00082	-.00159	-.00087	.85464	.71374	1.19742
GRADIENT	-.00010	-.00002	-.00002	-.00002	.02824	.03408	-.04269

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEWIN = 10.000 BOFLAP = .000
 RUDDER = .000 SDOBER = 99.000
 RN/L = 10.000



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TABULATED SOURCE DATA FOR OM87 (ARC 3.5-178)

AMES 3.5-178 OM87 140 A/B ONE-ITER (AEF005) (04 DEC 73)

REFERENCE DATA

SRCP = 2000.0000 50.FT. WWP = 1076.4070 IN.
 LREF = 1290.3000 IN. WWP = .0000 IN.
 BRCP = 936.0000 IN. WWP = 375.0000 IN.
 SCALE = .0190 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVON = 10.000 BOFLAP = .000
 RUDDER = .000 SPDBRK = 55.000
 BN/L = 10.000

RUN NO. 3/0 BN/L = 0.01 GRADIENT INTERVAL = -5.00/ 5.00

MAON	ALPHA	CY	CYN	CL	CD	L/D
7.320	11.962	-0.00000	-0.00047	.17136	.00091	1.72407
7.320	15.661	-0.00070	-0.00092	.27406	.14090	1.95077
7.320	19.451	-0.00049	-0.00092	.30831	.20531	1.09424
7.320	23.224	-0.00028	-0.00143	.51193	.29755	1.72723
7.320	27.774	-0.00006	-0.00139	.64764	.42363	1.22070
7.320	31.718	-0.00049	-0.00136	.75973	.55517	1.55771
7.320	35.035	-0.00041	-0.00174	.80365	.72164	1.13678
GRADIENT		-0.00001	-0.00005	.00002	.02815	-.02825

AMES 3.5-178 OM87 140 A/B ONE-ITER

(AEF004) (04 DEC 73)

REFERENCE DATA

SRCP = 2000.0000 50.FT. WWP = 1076.4070 IN.
 LREF = 1290.3000 IN. WWP = .0000 IN.
 BRCP = 936.0000 IN. WWP = 375.0000 IN.
 SCALE = .0190 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVON = -40.000 BOFLAP = .000
 RUDDER = .000 SPDBRK = 55.000
 BN/L = 10.000

RUN NO. 4/0 BN/L = 0.06 GRADIENT INTERVAL = -5.00/ 5.00

MAON	ALPHA	CY	CYN	CL	CD	L/D
7.320	11.005	-0.01009	-0.00038	.12415	.09358	1.20052
7.320	15.507	-0.00901	-0.00077	.22241	.12733	1.74670
7.320	19.411	-0.00903	-0.00129	.32734	.18145	1.00404
7.320	23.543	-0.00837	-0.00163	.43479	.28133	1.07093
7.320	27.655	-0.00801	-0.00152	.54034	.37847	1.51302
7.320	31.033	-0.01008	-0.00164	.66971	.49673	1.35176
7.320	35.948	-0.00944	-0.00190	.79014	.63492	1.19722
GRADIENT		.00001	-0.00006	.00007	.02835	-.01274

AMES 3.5-176 ORBIT 140 A/B ORBITER

(AEPP003) (04 DEC 73)

REFERENCE DATA

SEEP = 2090.0000 50.0 FT. XREF = 1076.4000 IN.
 LEOP = 1290.3000 IN. YREF = .0000 IN.
 OREF = 936.8000 IN. ZREF = 375.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .000 AILSON = .000
 ELEVON = -40.000 BOFLAP = .000
 RUDDER = .000 SPEEDER = 55.000
 RW/L = 3.000

RUN NO. 5/0 RW/L = 1.70 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
7.320	11.627	-.00062	-.00067	.00010	.12129	.00427	1.20037
7.320	15.256	-.00072	-.00077	-.00071	.21239	.12033	1.07003
7.320	18.976	-.00066	-.00119	-.00070	.31210	.17000	1.07047
7.320	22.971	-.00029	-.00163	.00033	.42609	.29703	1.09020
7.320	27.063	-.00041	-.00150	.00047	.54411	.35190	1.34300
7.320	30.990	-.00020	-.00137	-.00002	.64744	.40030	1.50021
7.320	34.941	-.00064	-.00135	.00070	.74217	.47033	1.23023
7.320	39.121	-.00062	-.00194	.00036	.82931	.59900	1.09146
7.320	43.100	-.00032	-.00210	.00070	.89032	.66402	.94512
7.320	47.423	-.00050	-.00234	.00016	.92990	1.10511	.84110
GRADIENT		-.00007	-.00004	.00001	.00394	.00030	-.00210

AMES 3.5-176 ORBIT 140 A/B ORBITER

(AEPP003) (04 DEC 73)

REFERENCE DATA

SEEP = 2090.0000 50.0 FT. XREF = 1076.4000 IN.
 LEOP = 1290.3000 IN. YREF = .0000 IN.
 OREF = 936.8000 IN. ZREF = 375.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .000 AILSON = .000
 ELEVON = 10.000 BOFLAP = .000
 RUDDER = .000 SPEEDER = 55.000
 RW/L = 3.000

RUN NO. 6/0 RW/L = 1.74 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
7.320	11.639	-.00063	-.00069	-.00019	.10463	.00783	1.03143
7.320	15.248	-.00064	-.00110	-.00010	.20402	.13903	1.09017
7.320	18.994	-.00050	-.00139	-.00010	.32790	.19040	1.07013
7.320	22.997	-.00007	-.00177	-.00001	.46033	.28003	1.04000
7.320	27.062	-.00070	-.00161	-.00011	.60737	.40737	1.04000
7.320	30.934	-.00024	-.00154	-.00007	.74703	.53077	1.30047
7.320	34.853	-.00004	-.00156	-.00005	.87632	.64571	1.20030
7.320	39.134	-.00051	-.00193	-.00002	.94079	.84431	1.04000
7.320	43.272	-.00072	-.00220	-.00009	1.01300	1.01300	.93400
7.320	47.449	-.00055	-.00220	-.00001	1.04306	1.07047	.80000
GRADIENT		-.00009	-.00003	.00000	.00612	.00202	-.00000



T-BULAT- SOURCE DATA FOR QAS7 (ARC 3.9-170)

(ALP7007) (04 DEC 73)

REFERENCE DATA

QAS7 = 2000.0000 50.FT. 1070.4000 IN.
LAP7 = 1200.0000 IN. 1000 IN.
QAS7 = 930.0000 IN. 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 7 / 3 RUN/L = 1.04 GRADIENT INTERVAL = -5.00/ 5.00

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEVON = .000 BOPLAP = .000
RUDDER = .000 SPDBRK = 95.000
BN/L = 3.000

MACH	ALPHA	CY	CYN	CEL	CL	CD	L/D
7.300	11.031	-.00462	-.00101	-.00007	.14000	.09353	1.57133
7.300	15.133	-.00430	-.00110	-.00005	.23000	.12770	1.00937
7.300	18.002	-.00422	-.00141	-.00001	.34000	.10113	1.00904
7.300	23.001	-.00407	-.00107	-.00002	.40210	.08156	1.70705
7.300	27.043	-.00470	-.00107	-.00002	.50970	.07019	1.59316
7.300	30.910	-.00507	-.00100	-.00001	.70235	.04220	1.42000
7.300	34.099	-.00599	-.00107	-.00000	.87770	.03990	1.20419
7.300	39.142	-.00612	-.00100	-.00001	.97440	.01420	1.11077
7.300	43.195	-.00501	-.00100	-.00001	.97200	.09442	.97011
7.300	47.471	-.00505	-.00100	-.00001	1.00491	1.17031	.05204
GRADIENT		-.00004	-.00003	-.00000	.00244	.00000	-.00793

ARC 3.9-170 QAS7 140 A/B ORBITER

(ALP7008) (04 DEC 73)

REFERENCE DATA

QAS7 = 2000.0000 50.FT. 1070.4000 IN.
LAP7 = 1200.0000 IN. 1000 IN.
QAS7 = 930.0000 IN. 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 8 / 3 RUN/L = 1.97 GRADIENT INTERVAL = -5.00/ 5.00

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEVON = .000 BOPLAP = -11.000
RUDDER = .000 SPDBRK = 95.000
BN/L = 3.000

MACH	ALPHA	CY	CYN	CEL	CL	CD	L/D
7.300	11.003	-.00407	-.00007	-.00010	.15423	.09029	1.00100
7.300	15.307	-.00430	-.00000	-.00010	.20421	.13117	1.00170
7.300	19.000	-.00007	-.00100	-.00005	.34001	.10000	1.00300
7.300	22.000	-.00001	-.00000	-.00001	.44007	.09032	1.75400
7.300	27.113	-.00700	-.00100	-.00000	.50001	.06702	1.57000
7.300	30.000	-.00701	-.00100	-.00000	.60000	.00000	1.41710
7.300	34.002	-.00440	-.00107	-.00004	.67490	.03017	1.20127
7.300	39.102	-.00500	-.00100	-.00000	.60004	.00900	1.10770
7.300	43.171	-.01000	-.00100	-.00000	.60751	.00900	.97771
7.300	47.300	-.01119	-.00100	-.00000	1.01147	1.10293	.05512
GRADIENT		-.00014	-.00004	-.00000	.00247	.00000	-.00700

REFERENCE DATA
 SREF = 209.0000 SO.FT. ZMRP = 1076.4000 IN.
 LREF = 1290.3000 IN. YMRP = .0000 IN.
 BREF = 936.6000 IN. ZMRP = 375.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVON = 10.000 BOFLAP = 16.300
 RUDDER = .000 SPOBRK = 55.000
 RN/L = 3.000

RUN NO. 11/ 0 RN/L = 1.95 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
7.320	11.644	-.00000	-.00054	-.00028	.17105	.10321	1.66515
7.320	15.235	-.00783	-.00089	-.00016	.27526	.14400	1.97102
7.320	18.971	-.00659	-.00105	-.00017	.36836	.20006	1.86665
7.320	22.979	-.00633	-.00159	-.00000	.51476	.29071	1.72331
7.320	27.026	-.00933	-.00126	-.00003	.63406	.42461	1.53970
7.320	30.899	-.00913	-.00109	.00000	.77301	.56365	1.37196
7.320	34.643	-.01016	-.00103	-.00042	.86025	.72656	1.21133
7.320	39.094	-.00941	-.00146	-.00003	.92825	.91613	1.06192
7.320	43.146	-.01013	-.00166	.00006	1.03427	1.10057	.93351
7.320	47.399	-.01062	-.00170	.00027	.07109	1.31936	.81161
7.320	GRADIENT	-.00000	-.00002	.00001	.02664	.03456	-.03065

REFERENCE DATA
 SREF = 209.0000 SO.FT. ZMRP = 1076.4000 IN.
 LREF = 1290.3000 IN. YMRP = .0000 IN.
 BREF = 936.6000 IN. ZMRP = 375.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVON = 10.000 BOFLAP = 16.300
 RUDDER = .000 SPOBRK = 55.000
 RN/L = 10.000

RUN NO. 12/ 0 RN/L = 6.45 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
7.320	11.925	-.00019	-.00040	-.00001	.16364	.10413	1.73664
7.320	15.627	-.00076	-.00066	-.00003	.29111	.14964	1.94539
7.320	19.414	-.00006	-.00113	-.00004	.40976	.21652	1.87516
7.320	23.463	-.00030	-.00146	-.00049	.53923	.31646	1.69409
7.320	27.693	-.00045	-.00131	-.00065	.67793	.44864	1.57772
7.320	31.675	-.00093	-.00135	-.00061	.79366	.59595	1.33515
7.320	35.749	-.00049	-.00169	-.00057	.90014	.76501	1.17644
7.320	GRADIENT	-.00003	-.00005	.00001	.03171	.02765	-.02046

AMES 3.5-176 ORBIT 140 A/B ORBITER

(AEP013) (14 DEC 73)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.4000 IN.
 LREF = 1790.3000 IN. YMRP = .0000 IN.
 DREF = 936.6000 IN. ZMRP = 375.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVON = 15.000 BOPLAP = 16.300
 RUDDER = .000 SPEEDR = 55.000
 RN/L = 10.000

RUN NO. 13/ 0 RN/L = 6.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CT	CYN	CBL	CL	CD	L/C
7.320	11.895	-.00060	-.00049	-.00055	.19523	.11266	1.75267
7.320	15.544	-.00045	-.00079	-.00091	.30768	.16148	1.97541
7.320	19.306	-.00076	-.00125	-.00044	.43206	.25649	1.82776
7.320	23.464	-.00154	-.00160	-.00121	.56497	.34248	1.64064
7.320	27.667	-.00054	-.00103	-.00022	.70904	.46725	1.46817
7.320	31.616	-.00052	-.00176	-.00031	.82149	.63721	1.30351
7.320	35.700	-.00004	-.00059	-.00013	.92451	.87443	1.14927
GRADIENT	.00012	-.00012	-.00016	.00012	.03117	.00019	-.02366

AMES 3.5-176 ORBIT 140 A/B ORBITER

(AEP114) (14 DEC 73)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.4000 IN.
 LREF = 1790.3000 IN. YMRP = .0000 IN.
 DREF = 936.6000 IN. ZMRP = 375.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVON = -40.000 BOPLAP = 16.300
 RUDDER = .000 SPEEDR = 55.000
 RN/L = 10.000

RUN NO. 14/ 0 RN/L = 7.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CT	CYN	CBL	CL	CD	L/C
7.320	11.865	-.00045	-.00036	-.00028	.13235	.09965	1.32543
7.320	15.465	-.00042	-.00072	-.00046	.23333	.13395	1.74103
7.320	19.431	-.00043	-.00122	-.00059	.34539	.17791	1.76313
7.320	23.507	-.00031	-.00166	-.00035	.46255	.24329	1.65124
7.320	27.731	-.00056	-.00144	-.00065	.56766	.33437	1.49429
7.320	31.637	-.00031	-.00156	-.00040	.69241	.52462	1.32997
7.320	35.645	-.00063	-.00080	-.00061	.76961	.67239	1.17436
GRADIENT	.00006	-.00006	-.00015	-.00012	.02777	.02394	-.01435



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TABULATED SOURCE DATA FOR ORBIT (ASC 3.5-178) (AEF018) (04 DEC 73)

AMES 3.5-178 ORBIT 140 A/B ORBITER

REFERENCE DATA

STEP = 2000.0000 50.0 FT. YMRP = 1070.4000 IN.
LREF = 1890.0000 IN. YMRP = 0.0000 IN.
BREF = 906.0000 IN. ZMRP = 375.0000 IN.
SCALE = .0150 SCALE

PARAMETRIC DATA

DETA = .0000 AILCON = .0000
ELEVCON = .0000 BDFLAP = 16.5000
RUDDER = .0000 SPDBRK = 55.0000
BN/L = 10.0000

RUN NO. 15/ 0 BN/L = 6.11 GRADIENT INTERVAL = -5.00/ 5.00

MAON	ALPHA	CY	CYN	CBL	CL	CD	L/D
7.320	11.820	-.00020	-.00005	-.00036	.15984	.00001	1.66460
7.320	15.815	-.00079	-.00102	-.00062	.26525	.13724	1.93259
7.320	19.356	-.00610	-.00149	-.00071	.37606	.19377	1.83251
7.320	23.493	-.00687	-.00169	-.00032	.50621	.29421	1.72400
7.320	27.720	-.00611	-.00177	-.00049	.61592	.41725	1.55166
7.320	31.712	-.00790	-.00166	-.00001	.70329	.55315	1.36132
7.320	35.805	-.00714	-.00230	-.00073	.83773	.71457	1.20135
GRADIENT	.00003	-.00006	-.00001	-.00001	.00262	.02590	-.02602

AMES 3.5-178 ORBIT 140 A/B ORBITER

(AEF018) (04 DEC 73)

REFERENCE DATA

STEP = 2000.0000 50.0 FT. YMRP = 1070.4000 IN.
LREF = 1890.0000 IN. YMRP = 0.0000 IN.
BREF = 906.0000 IN. ZMRP = 375.0000 IN.
SCALE = .0150 SCALE

PARAMETRIC DATA

DETA = .0000 AILCON = .0000
ELEVCON = .0000 BDFLAP = -11.0000
RUDDER = .0000 SPDBRK = 55.0000
BN/L = 10.0000

RUN NO. 16/ 0 BN/L = 6.53 GRADIENT INTERVAL = -5.00/ 5.00

MAON	ALPHA	CY	CYN	CBL	CL	CD	L/D
7.320	11.971	-.00017	-.00062	-.00059	.19229	.09216	1.65240
7.320	15.670	-.00011	-.00092	-.00061	.25037	.12926	1.93706
7.320	19.465	-.00072	-.00139	-.00063	.35770	.18740	1.91915
7.320	23.566	-.00026	-.00161	-.00045	.47472	.27250	1.74227
7.320	27.803	-.00096	-.00150	-.00077	.61374	.38750	1.55006
7.320	31.637	-.01024	-.00150	-.00092	.71379	.51604	1.36107
7.320	35.930	-.00966	-.00182	-.00001	.81473	.66762	1.22107
GRADIENT	-.00009	-.00004	-.00001	-.00001	.02410	.02406	-.02406

TABULATED SOURCE DATA FOR ORBIT (ARC 3.5-176)

AMES 3.5-176 ORBIT 140 A/B ORBITER

(AEF019) (04 DEC 75)

REFERENCE DATA

SREF = 2000.0000 50. FT. XREF = 1076.4000 IN.
LREF = 1290.5000 IN. YREF = .0000 IN.
BREF = 936.6000 IN. ZREF = 375.0000 IN.
SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .0000 AILRON = 5.0000
ELEVON = 5.0000 BOFLAP = -11.7000
RUDDER = .0000 SPODRK = 55.0000
RN/L = 10.0000

RUN NO. 19/ 0 RN/L = 0.05 GRADIENT INTE /AL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
7.320	11.041	-.00651	-.00126	.00202	.15908	.09555	1.66479
7.320	15.645	-.00588	-.00186	.00293	.26206	.13549	1.93416
7.320	19.417	-.00535	-.00277	.00394	.37247	.16977	1.69777
7.320	23.535	-.00423	-.00361	.00516	.49216	.26496	1.72711
7.320	27.774	-.00491	-.00384	.00610	.62862	.40651	1.54196
7.320	31.025	-.00466	-.00436	.00694	.75999	.54205	1.36517
7.320	35.077	-.00451	-.00515	.00762	.84541	.60658	1.27649
GRADIENT		.00007	-.00016	.00024	.02865	.02512	-.02571

REFERENCE DATA

SREF = 2000.0000 50. FT. XREF = 1076.4000 IN.
LREF = 1290.5000 IN. YREF = .0000 IN.
BREF = 936.6000 IN. ZREF = 375.0000 IN.
SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .0000 AILRON = .0000
ELEVON = -40.0000 BOFLAP = -11.7000
RUDDER = .0000 SPODRK = 55.0000
RN/L = 3.0000

AMES 3.5-176 ORBIT 140 A/B ORBITER

(AEF020) (04 DEC 75)

RUN NO. 20/ 0 RN/L = 1.76 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
5.255	11.716	-.01157	.00010	-.00110	.14405	.11495	1.25321
5.255	15.340	-.01195	.00002	-.00048	.24680	.14773	1.67159
5.255	19.023	-.01113	-.00060	-.00042	.35227	.19216	1.76663
5.255	23.185	-.00930	-.00112	-.00102	.45944	.27402	1.67664
5.255	27.299	-.01165	-.00101	-.00100	.59316	.36710	1.53233
5.255	31.216	-.01178	-.00126	-.00105	.69880	.50763	1.37604
5.255	35.170	-.01214	-.00116	-.00108	.79567	.64689	1.22650
5.255	39.485	-.01174	-.00114	-.00125	.87818	.81358	1.07367
5.255	43.661	-.01139	-.01162	-.00122	.93648	.96827	.94062
5.255	47.842	-.01155	-.01201	-.00120	.96547	1.16184	.83170
GRADIENT		-.00001	-.00035	-.00002	.02306	.02957	-.02101

(AEF021) (04 DEC 73)

WES 3.5-176 OMB7 140 A/B ORBITER

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEWON = 10.000 BDFLAP = 16.000
RUDDER = .000 SPDBRK = 55.000
RN/L = 3.000

REFERENCE DATA

SREF = 2600.0000 SQ.FT. XMRP = 1076.4800 IN.
LREF = 1290.3000 IN. YMRP = .0000 IN.
DREF = 936.6000 IN. ZMRP = 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 21/ 0 RN/L = 1.74 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
5.255	11.661	-.01262	.00003	-.00007	.21204	.12165	1.74306
5.255	15.232	-.01232	.00015	-.00018	.32076	.16648	1.92672
5.255	18.984	-.01155	-.00027	-.00010	.44252	.23999	1.87516
5.255	23.192	-.00983	-.00115	-.00060	.57121	.33458	1.70723
5.255	27.191	-.01195	-.00067	-.00157	.71661	.46832	1.53017
5.255	31.114	-.01151	-.00121	-.00153	.83659	.61794	1.35183
5.255	35.083	-.01136	-.00123	-.00194	.94233	.78591	1.19913
5.255	39.448	-.01149	-.00129	-.00259	1.03143	.98334	1.04678
5.255	43.461	-.00969	-.00196	-.00381	1.09144	1.18367	.92193
5.255	47.722	-.00827	-.00300	-.00527	1.11009	1.37611	.80669
GRADIENT		.00006	-.00006	-.00004	.02652	.03573	-.03220

(AEF022) (04 DEC 73)

AMES 3.5-176 OMB7 140 A/B ORBITER

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEWON = .000 BDFLAP = .000
RUDDER = .000 SPDBRK = 55.000
RN/L = 3.000

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.4800 IN.
LREF = 1290.3000 IN. YMRP = .0000 IN.
DREF = 936.6000 IN. ZMRP = 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 22/ 0 RN/L = 2.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
5.255	11.745	-.00883	-.00042	-.00029	.17867	.10742	1.66321
5.255	15.352	-.00839	-.00063	-.00023	.28008	.14555	1.92432
5.255	19.043	-.00817	-.00127	-.00009	.39011	.20358	1.91624
5.255	23.196	-.00717	-.00185	-.00045	.52089	.29501	1.76570
5.255	27.259	-.00935	-.00186	-.00007	.64683	.40369	1.58269
5.255	31.195	-.00940	-.00206	-.00038	.75982	.53832	1.41146
5.255	35.233	-.00955	-.00220	-.00043	.86603	.69365	1.24981
5.255	39.564	-.00922	-.00242	-.00014	.96295	.88100	1.00093
5.255	43.604	-.00870	-.00250	.00003	1.02849	1.08920	.96129
5.255	47.926	-.00846	-.00295	.00027	1.06628	1.27147	.83867
GRADIENT		-.00002	-.00006	.00001	.02582	.03261	-.03018

DATE 19 MAR 74

TABULATED SOURCE DATA FOR OA87 (ARC 3.5-178)

PAGE 27

(AEF023) (04 DEC 73)

AMES 3.5-176 OA87 140 A/B ORBITER

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XREF = 1076.4800 IN.
LREF = 1290.3000 IN. YREF = .0000 IN.
BREF = 936.6000 IN. ZREF = 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 23/ 0 RN/L = 1.04 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
5.207	11.633	-.00363	-.00098	-.00027	.16993	.05006	1.61753
5.207	15.217	-.00463	-.00113	-.00039	.26718	.14181	1.88437
5.207	18.957	-.00436	-.00173	-.00031	.36988	.19520	1.89486
5.170	22.764	-.00086	.00019	.00005	.00246	-.00110	-.41903
5.207	22.764	-.00547	-.00200	-.00016	.49341	.27916	1.76750
5.207	27.020	-.00601	-.00207	-.00027	.60710	.37973	1.59878
5.207	30.898	-.00460	-.00271	-.00012	.72123	.50325	1.43315
5.207	34.899	-.00721	-.00232	-.00076	.82555	.64977	1.27053
5.7	39.059	-.00848	-.00237	-.00073	.92094	.82434	1.11719
5.207	43.137	-.00783	-.00286	-.00012	.98434	1.00165	.98272
5.207	47.425	-.00759	-.00342	.00012	1.02751	1.20148	.85520
	GRADIENT	-.00014	-.00007	.00000	.02726	.03236	-.01987

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEVON = .000 BDFLAP = .000
RUDDER = .000 SPDBRK = 55.000
RN/L = 1.300

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XREF = 1076.4800 IN.
LREF = 1290.3000 IN. YREF = .0000 IN.
BREF = 936.6000 IN. ZREF = 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 24/ 0 RN/L = .76 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
7.320	11.752	-.01547	.00009	-.00045	.15390	.09808	1.56906
7.320	15.332	-.01578	.00010	-.00072	.23864	.13035	1.83079
7.320	18.979	-.01557	-.00030	-.00117	.33788	.18218	1.85462
7.320	22.970	-.01101	-.00091	.00010	.44362	.25008	1.75919
7.320	27.016	-.01595	-.00090	-.00154	.56553	.35823	1.57865
7.320	30.667	-.01702	-.00074	-.00222	.65579	.46336	1.41531
7.320	34.795	-.01454	-.00083	-.00193	.72963	.57939	1.25532
7.320	38.995	-.01431	-.00128	.00020	.82175	.72295	1.10877
7.320	43.003	-.01520	-.00138	-.00161	.88219	.90112	.97900
7.320	47.232	-.01135	-.00157	.000373	.91784	1.07388	.85470
	GRADIENT	.00006	-.00005	.00005	.02256	.02778	-.02739

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEVON = .000 BDFLAP = .000
RUDDER = .000 SPDBRK = 55.000
RN/L = 1.300

AMES 3.5-176 OA87 140 A/B ORBITER

(AEF024) (04 DEC 73)

(AEF025) (04 DEC 73)

REFE DATA

SREF = 2690.0000 53.0 FT. XREF = 1076.4800 IN.
 LREF = 1290.3000 IN. YREF = .0000 IN.
 DREF = 936.6000 IN. ZREF = 375.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVEN = .000 BDFLAP = .000
 RUDDER = .000 SFDPRK = 55.000
 RN/L = .810

RUN NO. 25/0 RN/L = .53 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
7.320	11.646	-.01182	-.00019	-.00035	.14673	.10952	1.52019
7.320	15.245	-.01054	-.00038	-.00035	.22878	.12724	1.79802
7.320	18.925	-.01175	-.00041	-.00079	.32002	.17523	1.82623
7.320	22.871	-.01310	-.00120	-.00047	.48015	.27673	1.73506
7.320	26.941	-.01112	-.00033	-.00063	.54039	.34452	1.56252
7.320	30.840	-.01036	-.00147	-.00048	.64382	.45624	1.41114
7.320	34.729	-.01003	-.00097	-.00016	.73270	.58122	1.26361
7.320	38.929	-.00908	-.00142	.00012	.86410	.77529	1.11454
7.320	42.969	-.00946	-.00096	-.00034	.93628	.95754	.97781
7.320	47.153	-.01162	-.00106	-.00047	1.03394	1.20421	.85260
GRADIENT	.00003	.00003	-.00003	-.00000	.02520	.03046	-.02598

AVES 3.5-176 ORBIT 140 A/B ORBITER

(AEF026) (04 DEC 73)

REFERENCE DATA

SREF = 2690.0000 53.0 FT. XREF = 1076.4800 IN.
 LREF = 1290.3000 IN. YREF = .0000 IN.
 DREF = 936.6000 IN. ZREF = 375.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVEN = .000 BDFLAP = .000
 RUDDER = .000 SFDPRK = 55.000
 RN/L = 3.000

RUN NO. 26/0 RN/L = .50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
10.270	11.711	-.00829	-.00048	-.00025	.12736	.08496	1.49304
10.270	15.300	-.00759	-.00081	-.00025	.21484	.11717	1.83368
10.270	19.035	-.00706	-.00185	-.00032	.31036	.16606	1.85997
10.270	22.871	-.01174	.00171	-.00018	-.06225	-.02279	2.75733
10.270	23.093	-.00725	-.00133	-.00018	.42278	.24282	1.74113
10.270	27.133	-.00978	-.00102	-.00044	.54352	.34365	1.57327
10.270	31.010	-.01121	-.00111	-.00065	.65570	.46427	1.41114
10.270	35.000	-.01139	-.00123	-.00068	.75700	.60596	1.21358
GRADIENT	.00015	-.00003	-.00003	-.00003	.02724	.02257	-.01429

REFERENCE DATA

SREF = 2690.0000 SQ.FT.

LREF = 1290.3000 IN.

BREF = 936.6000 IN.

SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .0000

ELEVON = -40.0000

RUDDER = .0000

RN/L = 3.0000

AILRON = .0000

9DFLAP = 16.3000

SFDBRK = 55.0000

RUN NO. 27/ 0

RN/L = 1.00

GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CC	L/D
10.270	11.697	-.00925	-.00040	-.00014	.11657	.09034	1.28749
10.270	15.367	-.00867	-.00066	-.00036	.21237	.12429	1.70865
10.270	19.038	-.00807	-.00096	-.00025	.31397	.17794	1.76451
10.270	23.042	-.00725	-.00121	-.00095	.42769	.25796	1.63797
10.270	27.126	-.00785	-.00130	-.00043	.55069	.36634	1.50323
10.270	30.950	-.00785	-.00117	-.00094	.65348	.48426	1.34245
10.270	34.962	-.00743	-.00140	-.00059	.75131	.62669	1.13885
GRADIENT		-.00006	-.00004	-.00002	.02773	.02314	-.01180

REFERENCE DATA

SREF = 2690.0000 SQ.FT.

LREF = 1290.3000 IN.

BREF = 936.6000 IN.

SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .0000

ELEVON = 10.0000

RUDDER = .0000

RN/L = 3.0000

AILRON = .0000

9DFLAP = 16.3000

SFDBRK = 55.0000

RUN NO. 28/ 0

RN/L = 1.79

GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CC	L/D
10.270	11.715	-.00663	-.00034	-.00036	.15502	.09569	1.61659
10.270	15.376	-.00548	-.00068	-.00038	.25558	.13611	1.87916
10.270	19.004	-.00515	-.00081	-.00019	.36665	.19804	1.85135
10.270	23.005	-.00607	-.00090	-.00138	.49720	.29238	1.70053
10.270	27.127	-.00657	-.00099	-.00041	.63074	.41481	1.52056
10.270	30.951	-.00719	-.00081	-.00082	.74971	.55291	1.35594
10.270	34.913	-.00786	-.00110	-.00010	.85451	.71162	1.20045
GRADIENT		-.00007	-.00002	.00000	.03079	.02670	-.02441

TABULATED SOURCE DATA FOR ORBIT 140 (AFC 3.5-176)

AMES 3.5-176 ORBIT 140 A/B ORBITER

(AFC329) (14 DEC 73)

REFERENCE DATA

SREF = 2000.0000 SQ.FT. YREF = 1076.4000 IN.
 LREF = 1290.3000 IN. YREF = .0000 IN.
 ZREF = 936.6000 IN. ZREF = 375.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .0000 AILRON = .0000
 ELEVON = .0000 BOFLAP = .0000
 RUDDER = .0000 SPODRK = .0000
 RN/L = 3.0000

RUN NO. 29/0 RN/L = 1.70 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CEL	CL	CD	L/D
10.270	11.484	-.007794	-.000000	-.000000	.114091	.00736	1.24690
10.270	15.264	-.007751	-.000000	-.000000	.106401	.11775	1.60491
10.270	19.044	-.007708	-.000000	-.000000	.098711	.16544	1.76614
10.270	23.003	-.007665	-.000000	-.000000	.091021	.21319	1.30230
10.270	27.000	-.007622	-.000000	-.000000	.083331	.26094	1.13159
10.270	31.000	-.007579	-.000000	-.000000	.075641	.30869	1.06032
10.270	35.000	-.007536	-.000000	-.000000	.067951	.35644	1.00000
GRADIENT							

AMES 3.5-176 ORBIT 140 A/B ORBITER

(AFC330) (14 DEC 73)

REFERENCE DATA

SREF = 2000.0000 SQ.FT. YREF = 1076.4000 IN.
 LREF = 1290.3000 IN. YREF = .0000 IN.
 ZREF = 936.6000 IN. ZREF = 375.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .0000 AILRON = .0000
 ELEVON = .0000 BOFLAP = .0000
 RUDDER = .0000 SPODRK = .0000
 RN/L = 3.0000

RUN NO. 30/0 RN/L = 1.70 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CEL	CL	CD	L/D
10.270	11.484	-.007794	-.000000	-.000000	.114091	.00736	1.24690
10.270	15.264	-.007751	-.000000	-.000000	.106401	.11775	1.60491
10.270	19.044	-.007708	-.000000	-.000000	.098711	.16544	1.76614
10.270	23.003	-.007665	-.000000	-.000000	.091021	.21319	1.30230
10.270	27.000	-.007622	-.000000	-.000000	.083331	.26094	1.13159
10.270	31.000	-.007579	-.000000	-.000000	.075641	.30869	1.06032
10.270	35.000	-.007536	-.000000	-.000000	.067951	.35644	1.00000
GRADIENT							